



FINAL

**ENVIRONMENTAL ASSESSMENT
FOR REMOTE VIDEO SURVEILLANCE SYSTEMS
UPGRADE PROGRAM (NEW TOWERS)
U.S. BORDER PATROL, TUCSON AND YUMA SECTORS, ARIZONA**

**U.S. Customs and Border Protection
Department of Homeland Security
Washington, DC**



SEPTEMBER 2012

FINDING OF NO SIGNIFICANT IMPACT

NAME OF PROPOSED ACTION

Remote Video Surveillance Systems (RVSS) Upgrade Program (New Towers), U.S. Border Patrol (USBP), Tucson and Yuma Sectors, Arizona

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The U.S. Customs and Border Protection (CBP) Office of Technology Innovation and Acquisition (OTIA) proposes to upgrade existing RVSS capabilities within the USBP Tucson and Yuma Sectors, Arizona. The upgrade includes replacement of existing RVSS equipment and installation of new cameras on existing and relocated RVSS towers and the construction of new RVSS towers for improved border surveillance in Arizona.

The Proposed Action includes the construction, operation, and maintenance of up to 20 RVSS towers and upgrade of command and control facilities in the USBP Yuma, Ajo, Nogales, Naco, and Douglas Stations' jurisdictions. Each tower will be equipped with a suite of day/night cameras, communications and support equipment.

The Proposed Action also includes construction of two access roads (approximately 72 feet) and improvement of 14 approach roads (approximately 19.2 miles). The access roads would typically be constructed to provide a 12-foot-wide driving surface with 2-foot shoulders (16 feet total width). Road construction consists of blading native material. Road improvements include reconstruction, widening, or straightening of existing roads, and installation of drainage structures, such as concrete low-water crossings. Road maintenance would be performed as part of CBP's comprehensive maintenance and repair program to ensure full-time access to the towers and other infrastructure.

Alternative 1: Alternative 1 consists of the construction, operation and maintenance of up to 20 RVSS towers; 14 at preferred sites and six at alternate sites. The same suite of day/night cameras, communications and optional equipment as the Proposed Action would be mounted on these RVSS towers. It also includes construction of one access road (approximately 25 feet) and improvement of 13 approach roads (approximately 19.8 miles).

No Action Alternative: Under the No Action Alternative, construction of the proposed RVSS towers will not take place and the current USBP operational practices and procedures will continue.

PUBLIC INVOLVEMENT

OTIA initiated public involvement and coordination with Federal, state and local agencies and Federally recognized tribes during site selection activities in June 2011. On June 6, 2012, OTIA released the draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) to the public for review and comment. A Notice of Availability for the draft EA and proposed FONSI was published in the *Arizona Daily Star*, *Yuma Sun*, *Ajo Copper News*, *Nogales International*, *Douglas Dispatch* and *Bisbee Observer*. The draft EA was also available for review at the four public libraries in Yuma, Ajo, Nogales, Bisbee and Douglas from June 6, 2012 to July 6, 2012. Comment letters were received from California Department of Transportation, California Department of Toxic Substances Control, Arizona State Historic Preservation Officer (SHPO), Arizona Game and Fish Department, Arizona Department of Environmental Quality, Bureau of Reclamation, Organ Pipe Cactus National Monument and Native American Heritage Commission. Comments are included in Appendix A of the final EA, and each comment was addressed, as applicable.

ENVIRONMENTAL CONSEQUENCES

Best management practices (BMPs) to reduce or minimize potential impacts on a particular resource are described in Section 5.0 of the final EA and are incorporated by reference to this Finding of No Significant Impact.

Physical Environment: The Proposed Action will have a permanent, direct impact on 64.5 acres of land, and approximately 37.1 acres will be temporarily disturbed. Standard erosion control and soil stabilization BMPs will be implemented during and following construction. Construction will not occur in wetlands.

The withdrawal of water for construction purposes could have a short-term, minor impact on groundwater resources. Temporary and minor increases in air emissions and fugitive dust will occur during the construction, but would not exceed Federal and state criteria.

Natural Environment: The loss of approximately 64.5 acres of habitat will have a permanent, minor impact on wildlife. Increased noise and human presence during construction and maintenance could potentially affect wildlife. The short-term and intermittent use of spotlights at up to 12 towers will also have a minor impact on wildlife.

Six Federally-listed species may be affected, but are not likely to be adversely affected, they include: the lesser long-nosed bat, ocelot, Mexican spotted owl, jaguar, Chiricahua leopard frog and southwestern willow flycatcher. Endangered Species Act consultation with U.S. Fish and Wildlife Service has been completed for these species. Designated Critical Habitat for the Chiricahua leopard frog and southwestern willow flycatcher will not be affected by the Proposed Action. The Proposed Action will not affect designated Critical Habitat for the Mexican spotted owl.

The Proposed Action will have no effect on Sonoran desert tortoise and would have a potential minor impact on flat-tailed horned lizard. CBP will complete coordination with Bureau of Reclamation and Bureau of Land Management to ensure compliance with the Flat-tailed Horned

Lizard Rangewide Management Strategy. Conservation measures developed in consultation with U.S. Fish and Wildlife Service to reduce or minimize potential impacts on Federally protected species will be followed.

Qualified biological monitors will be present during all construction activities with the potential to disturb Federally-listed and state-listed species or damage their habitats and will be in sight of all construction equipment, vehicles and personnel during all construction activities. Removal of vegetation will be limited in areas with the potential to affect the lesser long-nosed bat and the Mexican spotted owl.

Cultural Resources: There will be no adverse effects on any properties eligible for the National Register of Historic Places. Concurrence from the Arizona SHPO has been received through the Section 106 process.

Cultural resources sites will be avoided during construction as requested by Arizona SHPO during consultation.


Human Environment: The Proposed Action will have a long-term, negligible impact on utilities and negligible to minor impacts on the night sky from the use of spotlights. The spotlights at 12 towers will operate, on average, twice per night for a period of approximately 5 minutes each use. The Proposed Action will have a long-term, negligible impact on the radio frequency environment.

During construction, there will be a temporary, minor impact on roadways and traffic. Construction expenditures will have a short-term beneficial effect on the local economy. No direct impacts on minority or low-income populations or children will occur.


Depending on the location of an observer, most towers will be visible from 3 to 5 miles away, and thus some towers will have a long-term, moderate impact on the aesthetic qualities of the region. There will be no exposure of the environment or public to any hazardous materials.

FINDING: On the basis of the findings of the EA, which is incorporated by reference, and has been conducted in accordance with the National Environmental Policy Act, the Council on Environmental Quality regulations, and Department of Homeland Security Management Directive, 023-01, and after careful review of the potential environmental impacts of implementing the proposal, we find there would be no significant impact on the quality of the human or natural environment, either individually or cumulatively, therefore there is no requirement to develop an Environmental Impact Statement. Further, we commit to implement BMPs and environmental design measures identified in the EA and supporting documents.

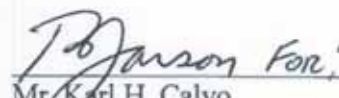
Because of overall program assessments, CBP has determined that only 18 of the proposed towers will be built at this time. RVSS tower sites TCA-AJO-0523 and TCA-AJO-0553 may be developed at some time in the future if funding is available; the appropriate level of environmental analysis will be determined subsequent to future activities regarding these two towers.

for 
Ms. Sonia N. Padilla
Executive Director Program Management Office
Office of Technology Innovation and Acquisition
U.S. Customs and Border Protection

9/11/2012
Date


Mr. David Hoffman
Chief, Strategic Planning, Policy, and Analysis Division
Headquarters, U.S. Border Patrol
U.S. Customs and Border Protection

9-11-2012
Date


Mr. Karl H. Calvo
Executive Director
Facilities Management and Engineering
U.S. Customs and Border Protection

9/12/12
Date

FINAL

**ENVIRONMENTAL ASSESSMENT
FOR
REMOTE VIDEO SURVEILLANCE SYSTEMS
UPGRADE PROGRAM (NEW TOWERS)
U.S. BORDER PATROL, TUCSON AND YUMA SECTORS, ARIZONA
U.S. CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, D.C.**

September 2012

Lead Agency: Department of Homeland Security
U.S. Customs & Border Protection
Office of Technology Innovation and Acquisition
1901 S. Bell Street, Room 7-001
Arlington, VA 20598

Points of Contact: Ms. Mary Hassell
Department of Homeland Security
U.S. Customs and Border Protection
Office of Technology Innovation and Acquisition
1901 S. Bell Street, Room 7-001
Arlington, VA 20598

Mr. Charles McGregor
U.S. Army Corps of Engineers
Engineering and Construction Support Office
819 Taylor Street, Room 3A14
Fort Worth, TX 76102

EXECUTIVE SUMMARY

INTRODUCTION: The U.S. Border Patrol (USBP) is the agency within the Department of Homeland Security (DHS) responsible for securing the Nation's borders against the illegal entry of people and goods between ports of entry. A mix of infrastructure, technology and personnel are used by USBP to detect, classify, track, respond to and resolve suspected illegal border crossings. The Remote Video Surveillance Systems (RVSS) is one of the technology features used by USBP to achieve its mission.

Since 1996, RVSS technology has been deployed by USBP for surveillance along the United States' borders with Canada and Mexico. Currently, there are 300 RVSS towers deployed along the southwest border. In 2010, U.S. Customs and Border Protection (CBP) conducted an "Analysis of Alternatives" (AoA) to determine the most efficient, effective, and economical way to meet the Nation's border security needs. The analysis concluded that a mix of technology options tailored to each area of the border was the optimal technology strategy compared to the one-size-fits-all, integrated fixed tower-based system strategy of the former Secure Border Initiative-network (SBInet). As a result, DHS Secretary Napolitano directed CBP to end SBInet as originally conceived and instead utilize existing, proven technology solutions tailored to the distinct terrain and population density of each border region.

Following the completion of the AoA, USBP developed a detailed technology deployment plan for each sector in Arizona based on current and anticipated operational activity. Accordingly, the new plan incorporates both the quantitative analysis of science and engineering experts and the real-world assessment of USBP on the ground operations.

The technology deployment plan will utilize existing, proven technology tailored to the distinct terrain and population density of each border region, including commercially available mobile surveillance systems, unmanned aircraft systems, thermal imaging devices, and tower-based RVSS. Where appropriate, this technology plan will also include elements of the former SBInet that were proven successful, such as stationary radar and infrared and optical sensor towers.

The existing RVSS is antiquated, and CBP Office of Technology Innovation and Acquisition (OTIA) proposes an upgrade to the existing RVSS for improved border surveillance coverage throughout Arizona. The proposed upgrade includes the replacement of existing

RVSS equipment and installation of new cameras on existing RVSS towers, installation of new cameras on relocated RVSS towers, and the construction of new RVSS towers. The construction, operation and maintenance of new RVSS towers are addressed in this Environmental Assessment (EA).

LOCATION: The proposed RVSS tower sites are located in USBP Yuma, Ajo, Nogales, Naco and Douglas Stations' Area of Responsibility (AOR) in Cochise, Pima, Santa Cruz and Yuma counties, Arizona, and Imperial County, California. These stations are located within the USBP Tucson and Yuma Sectors, Arizona.

PURPOSE AND NEED: The purpose of the proposed project is to improve CBP's efficiency of detection, identification and apprehension of cross-border violators (CBVs). The objective of the proposed project is to provide persistent surveillance capability; command and control (C2) capability; and sustainment of support capability along the United States/Mexico border within the affected stations' AORs. Meeting this purpose would provide more efficient and effective interdiction by USBP.

The RVSS Upgrade Program (New Towers) is needed to:

- 1) provide visual detection for the apprehension of CBVs across the United States/Mexico border;
- 2) offer improved performance (surveillance) of the United States/Mexico border;
- 3) address obsolescence issues;
- 4) enhance situational awareness;
- 5) reduce life-cycle costs and
- 6) improve/enhance RVSS survivability (i.e., paintball attacks, rocking, shooting)

PROPOSED ACTION AND ALTERNATIVES CONSIDERED: The Proposed Action, Alternative 1 and No Action Alternative were identified and considered during the planning stages of the proposed project.

The Proposed Action includes the construction, operation and maintenance of up to 20 RVSS towers in the USBP Tucson and Yuma Sectors (Table ES-1). The RVSS in each station's AOR consists of new RVSS towers and an upgrade to the C2 room at each of five USBP stations. Each proposed RVSS tower would be equipped with a suite of day/night cameras, communications equipment and support equipment. The EA addresses all 20 tower sites, but OTIA has decided to not construct two towers (TCA-AJO-0523 and TCA-AJO-0553) at this time due to overall program assessments.

However, the EA incorporates an assessment of impacts at all 20 proposed towers locations.

Table ES-1. Proposed Action RVSS Tower Sites

RVSS Site	Ajo Station	Douglas Station	Naco Station	Nogales Station	Yuma Station
YUM-YUS-0533					✓
YUM-YUS-0535					✓
YUM-YUS-0543					✓
YUM-YUS-0539					✓
YUM-YUS-0571					✓
YUM-YUS-0573					✓
YUM-YUS-0575					✓
YUM-YUS-0577					✓
TCA-AJO-0523*	✓				
TCA-AJO-0551*	✓				
TCA-NGL-0505				✓	
TCA-NGL-0507				✓	
TCA-NGL-0509				✓	
TCA-NGL-511*				✓	
TCA-NGL-0555				✓	
TCA-NCO-0525			✓		
TCA-NCO-0529			✓		
TCA-NCO-0567			✓		
TCA-DGL-0557		✓			
TCA-DGL-0565		✓			

* Will not be constructed at this time due to program assessments.

**TCA-NGL-511 was included as part of the SBInet Tucson West Tower Project EA (CBP 2008).

The Proposed Action requires the construction of two access roads (approximately 72 feet) and improvement of 14 approach roads (approximately 19.2 miles). Access roads are short road segments from an approach road to a proposed RVSS site. Approach roads are existing private or public roads used to travel to proposed RVSS sites. The new access roads would typically be constructed to provide a 12-foot-wide driving surface with 2-foot shoulders on each side (16 feet total width). Road construction consists of blading native material. Road improvements include reconstruction, widening or straightening of existing roads and installation of drainage structures, such as concrete low-water crossings. Maintenance of the roads would be performed as part of CBP's comprehensive maintenance and repair program for all roads associated with CBP tactical

infrastructure and OTIA projects required to ensure full-time access to the towers and other infrastructure.

Alternative 1 consists of the construction, operation and maintenance of up to 20 RVSS towers; 14 at preferred sites and six at alternate sites (Table ES-2). The same day/night cameras, communications and support equipment as the Proposed Action would be mounted on these RVSS towers. Only the tower layout differs from the Proposed Action. Alternative 1 requires the construction of 1 access road (approximately 25 feet) and improvement of 13 approach roads (approximately 19.8 miles).

Table ES-2. Alternative 1 RVSS Tower Sites

RVSS Site	Ajo Station	Douglas Station	Naco Station	Nogales Station	Yuma Station
YUM-YUS-0531					A
YUM-YUS-0533					P
YUM-YUS-0535					P
YUM-YUS-0539					A
YUM-YUS-0549					A
YUM-YUS-0571					P
YUM-YUS-0575					P
YUM-YUS-0577					P
TCA-AJO-0523*	P				
TCA-AJO-0553*	A				
TCA-NGL-0503				A	
TCA-NGL-0507				P	
TCA-NGL-0509				P	
TCA-NGL-511**				P	
TCA-NGL-0515				A	
TCA-NCO-0525			P		
TCA-NCO-0529			P		
TCA-NCO-0567			P		
TCA-DGL-0557		P			
TCA-DGL-0559		A			

* Will not be constructed at this time due to program assessments.

**TCA-NGL-513 was included as part of the SBInet Tucson West Tower Project EA (CBP 2008).

P=Preferred A=Alternate

Under the No Action Alternative, construction of the proposed RVSS towers would not take place, and the current USBP operational practices and procedures would continue. Visual detection,

surveillance and situational awareness would not be improved, and thus the purpose and need of this project would not be met.

**AFFECTED
ENVIRONMENT AND
ENVIRONMENTAL
CONSEQUENCES:**

The Proposed Action would result in permanent minor impacts on land use, soils and vegetative habitat. Impacts on surface water would be negligible. The Proposed Action could have a minor impact on the hydrology and hydraulics of the project region as a result of road construction and improvements. Impacts on groundwater resources would be short-term and minor. Temporary and minor increases in air emissions would occur during construction of the RVSS towers and road improvements. Best management practices (BMP) will be implemented to reduce potential impacts from erosion during construction. Impacts associated with noise level increases during construction activities would have a temporary, moderate impact on the environment. Long-term noise levels would decrease at TCA-AJO-0523 and TCA-AJO-0553 on the Organ Pipe Cactus National Monument, where solar-powered RVSS would replace existing mobile units, and long-term noise impacts would be minor for the remaining 18 RVSS towers. The Proposed Action would have a long-term, negligible impact on utilities and infrastructure. The Proposed Action would not result in the exposures of the environment or public to any hazardous materials. BMPs will be implemented as standard operating procedures during all construction activities, such as proper handling, storage and/or disposal of hazardous and/or regulated materials. A Stormwater Pollution Prevention Plan and a Spill Prevention, Control and Countermeasure Plan will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan. The proposed towers would emit radio frequency energy and electromagnetic radiation; therefore, long-term negligible adverse effects could occur.

Construction and staging for towers and access roads would have a temporary, minor impact on both wildlife resources and roadways and traffic within the region. Tower maintenance and/or refueling would also require monthly vehicle trips to each RVSS tower. Vehicle trips associated with tower maintenance would have a long-term, negligible impact on roadways and traffic.

The Proposed Action would have long-term, moderate impact on aesthetic qualities within 3 to 5 miles of a RVSS tower. Some towers could be visible up to 15 miles. As such, the RVSS towers would be readily visible in the region, depending on vegetation and topography.

The Proposed Action would not cause any changes to local employment rates, poverty levels or local incomes. Short-term beneficial impacts would be realized by retail stores, restaurants and

hotels, and from the purchase of fuel during the construction period. No direct impacts on minority or low-income populations or children would occur.

The Proposed Action may affect, but is not likely to adversely affect, lesser long-nosed bat (*Leptonycteris yerbabuenae*), ocelot (*Leopardus pardalis*), Mexican spotted owl (*Strix occidentalis lucida*), jaguar (*Panthera onca*), Chiricahua leopard frog (*Lithobates chiricahuensis*) and southwestern willow flycatcher (*Empidonax traillii extimus*). CBP has determined the Proposed Action may affect, but is not likely to adversely affect the Sonoran pronghorn (*Antilocapra americana*). Concurrence from U.S. Fish and Wildlife Service has not been received for this species. At CBP's discretion, consultation was not completed on the Sonoran pronghorn. The Proposed Action would not adversely modify proposed Critical Habitat for the southwestern willow flycatcher, would have no effect on designated Critical Habitat for the southwestern flycatcher or Chiricahua leopard frog or adversely affect designated Critical Habitat for Mexican spotted owl. Measures to avoid adverse effects on habitat and sensitive species have been developed in coordination with the U.S. Fish and Wildlife Service. The Proposed Action would not affect Sonoran desert tortoise (*Gopherus agassizii*), but would have a potential minor impact on flat-tailed horned lizard (*Phrynosoma mcallii*). Qualified biological monitors will be present during all construction activities with the potential to disturb Federally-listed and state-listed species or damage their habitats and will be in sight of all construction equipment, vehicles, and personnel during all construction activities. CBP will complete coordination with Bureau of Reclamation and Bureau of Land Management to ensure compliance with the Flat-tailed Horned Lizard Management Strategy.

Based on the archaeological survey, archival research results, and Native American Tribal consultation to date, CBP has determined that there would be no adverse effects on any properties eligible for the National Register of Historic Places. CBP will comply with Arizona SHPO's requests that cultural resources sites be protected during construction activities. Adverse effects on these sites will be avoided by either flagging the boundaries of the site, selecting alternative construction alignments or monitoring the site during construction. If avoidance measures are not feasible, further consultation with Arizona SHPO would be required.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION.....	1-1
1.1 BACKGROUND	1-1
1.2 STUDY LOCATION.....	1-3
1.3 PURPOSE AND NEED.....	1-3
1.4 SCOPE OF THE ANALYSIS	1-5
1.5 APPLICABLE ENVIRONMENTAL GUIDANCE, STATUTES AND REGULATIONS.....	1-5
1.6 PUBLIC INVOLVEMENT	1-5
1.7 REPORT ORGANIZATION.....	1-10
2.0 PROPOSED ACTION AND ALTERNATIVES.....	2-1
2.1 ALTERNATIVES AND ALTERNATIVE SELECTION	2-1
2.2 CRITERIA FOR TOWER SITE SELECTION.....	2-1
2.3 PROPOSED ACTION.....	2-3
2.3.1 Tower Characteristics	2-9
2.3.2 Construction of RVSS Towers.....	2-16
2.3.3 Operation and Maintenance of RVSS Towers.....	2-16
2.3.4 Road Construction, Repair, Improvement and Maintenance.....	2-17
2.4 ALTERNATIVE 1	2-17
2.5 NO ACTION ALTERNATIVE.....	2-18
2.6 ALTERNATIVES EVALUATED BUT ELIMINATED FROM FURTHER CONSIDERATION	2-27
2.6.1 Unmanned Aircraft Systems Alternative.....	2-27
2.6.2 Remote Sensing Satellites Alternative.....	2-27
2.6.3 Unattended Ground Sensors Alternative	2-27
2.6.4 Increased CBP Workforce Alternative	2-27
2.6.5 Increased Aerial Reconnaissance/Operations Alternative	2-28
2.7 ALTERNATIVES SUMMARY	2-28
3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES	3-1
3.1 ASSESSMENT PROCESS.....	3-1
3.2 LAND USE.....	3-3
3.2.1 Affected Environment.....	3-3
3.2.2 Environmental Consequences	3-5
3.2.2.1 Proposed Action.....	3-5
3.2.2.2 Alternative 1.....	3-5
3.2.2.3 No Action Alternative.....	3-5
3.3 SOILS	3-5
3.3.1 Affected Environment.....	3-5
3.3.2 Environmental Consequences.....	3-8
3.3.2.1 Proposed Action.....	3-8
3.3.2.2 Alternative 1.....	3-10

	3.3.2.3	No Action Alternative.....	3-10
3.4		WATER RESOURCES	3-10
	3.4.1	Affected Environment.....	3-10
	3.4.1.1	Surface Water.....	3-10
	3.4.1.2	Hydrology and Hydraulics.....	3-11
	3.4.1.3	Wetlands and Waters of the United States.....	3-11
	3.4.1.4	Groundwater	3-11
	3.4.1.5	Floodplains.....	3-12
	3.4.2	Environmental Consequences.....	3-13
	3.4.2.1	Proposed Action.....	3-13
	3.4.2.2	Alternative 1.....	3-15
	3.4.2.3	No Action Alternative.....	3-15
3.5		VEGETATIVE HABITAT	3-15
	3.5.1	Affected Environment.....	3-15
	3.5.2	Environmental Consequences.....	3-17
	3.5.2.1	Proposed Action.....	3-17
	3.5.2.2	Alternative 1.....	3-18
	3.5.2.3	No Action Alternative.....	3-18
3.6		WILDLIFE RESOURCES.....	3-18
	3.6.1	Affected Environment.....	3-18
	3.6.2	Environmental Consequences.....	3-19
	3.6.2.1	Proposed Action.....	3-19
	3.6.2.2	Alternative 1.....	3-20
	3.6.2.3	No Action Alternative.....	3-20
3.7		PROTECTED SPECIES AND CRITICAL HABITATS	3-20
	3.7.1	Affected Environment.....	3-20
	3.7.1.1	Federally Listed Species	3-20
	3.7.1.2	State-Listed Species	3-45
	3.7.2	Environmental Consequences.....	3-46
	3.7.2.1	Proposed Action.....	3-46
	3.7.2.2	Alternative 1.....	3-54
	3.7.2.3	No Action Alternative.....	3-54
3.8		CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES.....	3-55
	3.8.1	Affected Environment.....	3-55
	3.8.2	Cultural History	3-55
	3.8.3	Previous Investigations	3-56
	3.8.4	Current Investigations.....	3-57
	3.8.5	Environmental Consequences.....	3-58
	3.8.5.1	Proposed Action.....	3-58
	3.8.5.2	Alternative 1.....	3-59
	3.8.5.3	No Action Alternative.....	3-59
3.9		AIR QUALITY	3-59
	3.9.1	Affected Environment.....	3-59
	3.9.1.1	Greenhouse Gases and Climate Change	3-62
	3.9.2	Environmental Consequences.....	3-63
	3.9.2.1	Proposed Action.....	3-63
	3.9.2.2	Alternative 1.....	3-68

	3.9.2.3 No Action Alternative.....	3-68
3.10	NOISE.....	3-68
	3.10.1 Affected Environment.....	3-68
	3.10.2 Environmental Consequences.....	3-70
	3.10.2.1 Proposed Action.....	3-70
	3.10.2.2 Alternative 1.....	3-72
	3.10.2.3 No Action Alternative.....	3-72
3.11	UTILITIES AND INFRASTRUCTURE.....	3-72
	3.11.1 Affected Environment.....	3-72
	3.11.1.1 Utility Commercial Grid Power.....	3-72
	3.11.2 Environmental Consequences.....	3-73
	3.11.2.1 Proposed Action.....	3-73
	3.11.2.2 Alternative 1.....	3-73
	3.11.2.3 No Action Alternative.....	3-73
3.12	RADIO FREQUENCY ENVIRONMENT.....	3-74
	3.12.1 Affected Environment.....	3-74
	3.12.2 Environmental Consequences.....	3-75
	3.12.2.1 Proposed Action.....	3-75
	3.12.2.2 Alternative 1.....	3-76
	3.12.2.3 No Action Alternative.....	3-76
3.13	ROADWAYS AND TRAFFIC	3-76
	3.13.1 Affected Environment.....	3-76
	3.13.2 Environmental Consequences.....	3-77
	3.13.2.1 Proposed Action.....	3-77
	3.13.2.2 Alternative 1.....	3-77
	3.13.2.3 No Action Alternative.....	3-77
3.14	AESTHETIC AND VISUAL RESOURCES	3-78
	3.14.1 Affected Environment.....	3-78
	3.14.2 Environmental Consequences.....	3-79
	3.14.2.1 Proposed Action.....	3-79
	3.14.2.2 Alternative 1.....	3-79
	3.14.2.3 No Action Alternative.....	3-79
3.15	HAZARDOUS MATERIALS	3-79
	3.15.1 Affected Environment.....	3-79
	3.15.2 Environmental Consequences.....	3-80
	3.15.2.1 Proposed Action.....	3-80
	3.15.2.2 Alternative 1.....	3-80
	3.15.2.3 No Action Alternative.....	3-80
3.16	SOCIOECONOMICS	3-80
	3.16.1 Affected Environment.....	3-80
	3.16.2 Environmental Consequences.....	3-83
	3.16.2.1 Proposed Action.....	3-83
	3.16.2.2 Alternative 1.....	3-83
	3.16.2.3 No Action Alternative.....	3-85
3.17	ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN	3-85
	3.17.1 Affected Environment.....	3-85
	3.17.1.1 Executive Order 12898, Environmental Justice.....	3-85

3.17.1.2	Executive Order 13045, Protection of Children	3-86
3.17.2	Environmental Consequences	3-86
3.17.2.1	Proposed Action	3-86
3.17.2.2	Alternative 1	3-86
3.17.2.3	No Action Alternative	3-86
4.0	CUMULATIVE IMPACTS	4-1
4.1	DEFINITION OF CUMULATIVE IMPACTS	4-1
4.2	PAST IMPACTS WITHIN THE ROI	4-1
4.3	CURRENT AND REASONABLY FORESEEABLE CBP PROJECTS WITHIN AND NEAR THE ROI	4-1
4.4	OTHER AGENCY/ORGANIZATION PROJECTS WITHIN AND NEAR THE ROI	4-10
4.5	ANALYSIS OF CUMULATIVE IMPACTS	4-10
4.5.1	Land Use	4-11
4.5.2	Soils	4-11
4.5.3	Water Resources	4-11
4.5.4	Vegetative Habitat	4-11
4.5.5	Wildlife Resources	4-11
4.5.6	Protected Species and Critical Habitats	4-12
4.5.7	Cultural Resources	4-13
4.5.8	Air Quality	4-13
4.5.9	Noise	4-13
4.5.10	Utilities and Infrastructure	4-13
4.5.11	Radio Frequency Environment	4-14
4.5.12	Roadways and Traffic	4-14
4.5.13	Aesthetics and Visual Resources	4-14
4.5.14	Hazardous Materials	4-14
4.5.15	Socioeconomics	4-14
4.5.16	Environmental Justice and Protection of Children	4-14
5.0	BEST MANAGEMENT PRACTICES	5-1
5.1	GENERAL CONSTRUCTION ACTIVITIES	5-1
5.2	SOILS	5-2
5.3	BIOLOGICAL RESOURCES	5-3
5.4	PROTECTED SPECIES	5-4
5.5	CULTURAL RESOURCES	5-8
5.6	AIR QUALITY	5-8
5.7	WATER RESOURCES	5-8
5.8	NOISE	5-9
5.9	SOLID AND HAZARDOUS WASTES	5-9
5.10	ROADWAYS AND TRAFFIC	5-9
6.0	REFERENCES	6-1
7.0	ACRONYMS/ABBREVIATIONS	7-1
8.0	LIST OF PREPARERS	8-1

LIST OF FIGURES

Figure 1-1.	Project Vicinity Map.....	1-4
Figure 2-1.	Proposed Action RVSS Tower Sites in Yuma Station's AOR.....	2-4
Figure 2-2.	Proposed Action RVSS Tower Sites in Ajo Station's AOR.....	2-5
Figure 2-3.	Proposed Action RVSS Tower Sites in Nogales Station's AOR.....	2-6
Figure 2-4.	Proposed Action RVSS Tower Sites in Naco Station's AOR	2-7
Figure 2-5.	Proposed Action RVSS Tower Sites in Douglas Station's AOR	2-8
Figure 2-6.	Typical Monopole Tower Profile.....	2-10
Figure 2-7.	Notional Site Layout with Commercial Grid Power.....	2-13
Figure 2-8.	Notional Site Layout with Alternative Power Source.....	2-14
Figure 2-9.	Alternative 1 RVSS Tower Sites in Yuma Station's AOR.....	2-19
Figure 2-10.	Alternative 1 RVSS Tower Sites in Ajo Station's AOR.....	2-20
Figure 2-11.	Alternative 1 RVSS Tower Sites in Nogales Station's AOR	2-21
Figure 2-12.	Alternative 1 RVSS Tower Sites in Naco Station's AOR	2-22
Figure 2-13.	Alternative 1 RVSS Tower Sites in Douglas Station's AOR	2-23
Figure 3-1.	Proposed Towers in Yuma Station's AOR and Proposed Critical Habitat for Southwestern Willow Flycatcher.....	3-29
Figure 3-2.	Proposed and Alternative Towers and Mexican Spotted Owl Critical Habitat and Range	3-31
Figure 3-3.	Proposed and Alternate Tower Locations near Mexican Spotted Owl Critical Habitat.....	3-32
Figure 3-4.	Proposed and Alternate Towers in Tucson Sector Towers and Lesser Long-nosed Bat Roost Sites.....	3-33
Figure 3-5.	Proposed Towers within and near Current Sonoran Pronghorn Range	3-36
Figure 3-6.	Proposed and Alternate Towers within Potential Jaguar Habitat - Nogales Station's AOR.....	3-38
Figure 3-7.	Proposed Towers within Potential Jaguar Habitat - Naco Station's AOR.....	3-39
Figure 3-8.	Proposed and Alternate Towers near Potential Jaguar Habitat - Douglas Station's AOR	3-40
Figure 3-9.	General Distribution of the Chiricahua Leopard Frog in Arizona.....	3-42
Figure 3-10.	Potentially Affected Chiricahua Leopard Frog Habitat.....	3-43
Figure 3-11.	Proposed and Alternate Towers in Flat-tailed Horned Lizard Range - Yuma Station's AOR.....	3-47
Figure 3-12.	Proposed Towers and Historical Sonoran Pronghorn Location Data (1994 - 2011).....	3-50
Figure 4-1.	Current and Reasonably Foreseeable CBP Projects in Yuma Station's AOR.....	4-3
Figure 4-2.	Current and Reasonably Foreseeable CBP Projects in Ajo Station's AOR.....	4-4
Figure 4-3.	Current and Reasonably Foreseeable CBP Projects in Nogales Station's AOR	4-5
Figure 4-4.	Current and Reasonably Foreseeable CBP Projects in Sonoita Station's AOR	4-7
Figure 4-5.	Current and Reasonably Foreseeable CBP Projects in Naco Station's AOR	4-8
Figure 4-6.	Current and Reasonably Foreseeable CBP Projects in Douglas Station's AOR	4-9

LIST OF TABLES

Table ES-1.	Proposed Action RVSS Tower Sites.....	ES-3
Table ES-2.	Alternative 1 RVSS Tower Sites	ES-4
Table 1-1.	Summary of Guidance, Statutes and Relevant Regulations Including Compliance Requirements	1-6
Table 2-1.	Candidate Sites Proposed but Eliminated	2-2
Table 2-2.	Proposed Action RVSS Tower Sites.....	2-3
Table 2-3.	Proposed Action Tower Site Data and Configuration	2-11
Table 2-4.	Alternative 1 RVSS Tower Sites	2-18
Table 2-5.	Alternative 1 Tower Site Data and Configuration	2-25
Table 2-6.	Alternate Tower Site Constraint Summary	2-29
Table 2-7.	Purpose and Need for Alternatives	2-29
Table 2-8.	Summary Matrix of Potential Impacts.....	2-31
Table 3-1.	Resources Analyzed in the Environmental Impact Analysis Process.....	3-1
Table 3-2.	Temporary and Permanent Impacts Resulting from the Proposed and Alternative Towers.....	3-2
Table 3-3.	Proposed Tower Site Land Ownership	3-4
Table 3-4.	Characteristics of Soils at the Proposed RVSS Tower Sites.....	3-6
Table 3-5.	Soil Impacts Resulting from the Proposed Action.....	3-9
Table 3-6.	List of Impaired Waterbodies near Project Area	3-11
Table 3-7.	Groundwater Basins Use and Recharge Rate	3-12
Table 3-8.	Impacts expected from Proposed Approach Road Improvements in Waters of the United States.....	3-13
Table 3-9.	Road Construction Water Use Segregated by Groundwater Basins.....	3-14
Table 3-10.	Potential Impacts by Vegetation Community Type.....	3-17
Table 3-11.	Federally Listed Species Potentially Occurring within or near the Project Area	3-22
Table 3-12.	Summary of Previous Research within a 1-mile Radius	3-56
Table 3-13.	National Ambient Air Quality Standards.....	3-60
Table 3-14.	NAQAS Attainment Status of the Arizona Project Sites.....	3-61
Table 3-15.	NAAQS and CAAQS Air Quality Status in Imperial County.....	3-62
Table 3-16.	Total Air Emissions (tons/year) from the Proposed Action Construction versus the <i>de minimis</i> Threshold Levels-Cochise County	3-64
Table 3-17.	Total Air Emissions (tons/year) from the Proposed Action Construction versus the <i>de minimis</i> Threshold Levels-Pima County	3-64
Table 3-18.	Total Air Emissions (tons/year) from the Proposed Action Construction versus the <i>de minimis</i> Threshold Levels-Yuma County	3-64
Table 3-19.	Total Air Emissions (tons/year) from the Proposed Action Construction versus the <i>de minimis</i> Threshold Levels-Santa Cruz County	3-65
Table 3-20.	Total Air Emissions (tons/year) from the Proposed Action Construction versus the <i>de minimis</i> Threshold Levels-Imperial County	3-65
Table 3-21.	Total Air Emissions (tons/year) from Operations of the Proposed Towers versus the <i>de minimis</i> Threshold Levels-Cochise County	3-66
Table 3-22.	Total Air Emissions (tons/year) from Operations of the Proposed Towers versus the <i>de minimis</i> Threshold Levels-Pima County	3-66

LIST OF TABLES, CONTINUED

Table 3-23.	Total Air Emissions (tons/year) from the Operations of the Proposed Towers versus the <i>de minimis</i> Threshold Levels-Yuma County	3-66
Table 3-24.	Total Air Emissions (tons/year) from the Operations of the Proposed Towers versus the <i>de minimis</i> Threshold Levels-Santa Cruz County	3-67
Table 3-25.	Total Air Emissions (tons/year) from the Operations of the Proposed Towers versus the <i>de minimis</i> Threshold Levels-Imperial County	3-67
Table 3-26.	Preferred and Alternative Tower Sites and Distance to Sensitive Noise Receptors.....	3-69
Table 3-27.	A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances.....	3-71
Table 3-28.	Power Company Service Areas	3-72
Table 3-29.	Population	3-81
Table 3-30.	Race and Ethnicity	3-81
Table 3-31.	Income and Poverty	3-82
Table 3-32.	Housing Units	3-82
Table 3-33.	Employment by Industry Sector	3-84
Table 3-34.	Minority Population and Poverty Data	3-86
Table 5-1.	Towers Requiring Biological Monitors	5-5
Table 5-2.	Seasonal Restrictions for Potentially Affected Species	5-7

LIST OF PHOTOGRAPHS

Photograph 2-1.	Typical RVSS tower	2-9
Photograph 3-1.	Overview of Sonoran Desertscrub Community within the Yuma Project Area	3-16
Photograph 3-2.	Overview of Sonoran Desertscrub Community within the Ajo Project Area	3-16
Photograph 3-3.	Overview of Madrean Evergreen Woodland Community within the Nogales Project Area	3-16
Photograph 3-4.	Overview of Chihuahuan Desertscrub Community within the Naco Project Area	3-16
Photograph 3-5.	Overview of Semi-Desert Grassland Community within the Douglas Project Area	3-16
Photograph 3-6.	Southwestern Willow Flycatcher.....	3-21
Photograph 3-7.	Mexican Spotted Owl (Source: USFWS)	3-28
Photograph 3-8.	Lesser Long-nosed Bat	3-33
Photograph 3-9.	Sonoran Pronghorn (Source: USFWS)	3-35
Photograph 3-10.	Jaguar	3-35
Photograph 3-11.	Ocelot.....	3-37
Photograph 3-12.	Sonoran Desert Tortoise	3-44
Photograph 3-13.	Flat-tailed Horned Lizard (Source: GSRC)	3-46

LIST OF APPENDICES

- Appendix A. Correspondence
- Appendix B. RVSS Upgrade Program (New Towers) Tower Sites
- Appendix C. Soil Maps
- Appendix D. Wildlife Observed During Biological Surveys
- Appendix E. Arizona and California State-Protected Species Lists
- Appendix F. Air Quality Calculations

SECTION 1.0
INTRODUCTION



1.0 INTRODUCTION

1.1 BACKGROUND

The Department of Homeland Security (DHS) is charged with managing, securing and controlling the Nation's borders with a priority mission focus of preventing terrorists and terrorist weapons from entering the United States. U.S. Customs and Border Protection (CBP) represents the front line in defending the United States against terrorists and instruments of terror and protects the economic security of the United States by regulating and facilitating the lawful movement of goods and people across the United States' borders. In support of the 2012-2016 Strategic Plan (CBP 2012a), U.S. Border Patrol (USBP) is tasked with the responsibility of securing the Nation's borders against the illegal entry of people, weapons, drugs and contraband between Ports of Entry (POE). The Strategic Plan outlines goals to combat the greatest risks through enhanced situational awareness and intelligence (Information); coordinated operations with Federal, state, local, tribal and international partners (Integration); and the ability to respond quickly to changing threats (Rapid Response) (CBP 2012a).

USBP manages its requirements for existing and emerging technology at the Headquarters level, based on input from agents in the field. USBP assesses technological needs of the mission and capability gaps, then works with CBP partners such as the Office of Technology Innovation and Acquisition (OTIA) (CBP 2012a). OTIA's mission is to facilitate the effective identification, acquisition and life-cycle support of products and services while driving innovation to improve CBP's mission performance in securing the border and facilitating the lawful movement of goods and people. OTIA is the proponent of the Remote Video Surveillance System (RVSS) Upgrade Program (New Towers) in the USBP Tucson and Yuma sectors.

In 2005, DHS initiated a technology-based border surveillance program known as the Secure Border Initiative-Network (SBI*net*). The SBI*net* program, as conceived in 2005, was intended to cover the entire southwest border with a highly integrated set of fixed sensor towers. Since its inception, SBI*net* had technical problems, cost overruns and schedule delays, raising serious questions about the system's ability to meet the needs for technology along the border (DHS 2011).

Soon after becoming Secretary of DHS, Secretary Napolitano asked CBP for an analysis of the SBI*net* program. Based on the finding from this analysis, in January 2010, Secretary Napolitano ordered a Department-wide reassessment of the SBI*net* program that incorporated an "Analysis of Alternatives" (AoA) to determine if SBI*net* is the most efficient, effective and economical way to meet our Nation's border security needs (DHS 2011).

The results of the AoA showed that the selection of technology for a given area of the border is highly dependent on the nature of that area. The heart of the SBI*net* concept, a one-size-fits-all, integrated fixed tower-based system, is not applicable across the entire border. In fact, the AoA suggested that the optimal technology deployment strategy involve a mix of technology options tailored to each area of the border and based on the operational judgment of the USBP agents in the area (DHS 2011).

Based on the AoA, DHS concluded that the *SBI*net program, as originally proposed, does not meet current standards for viability and cost-effectiveness. While it has generated some advances in technology that have improved USBP agents' ability to detect, identify, deter and respond to threats along the border, *SBI*net does not and cannot provide a single technological solution to border security. As a result, Secretary Napolitano directed CBP to end *SBI*net as originally conceived and instead utilize existing, proven technology solutions tailored to the distinct terrain and population density of each border region (DHS 2011).

After completion of the AoA, USBP used the results to develop a detailed technology deployment plan (Arizona Technology Plan [ATP]) for both USBP sectors in Arizona based on current and anticipated operational activity. Accordingly, the new plan incorporates both the quantitative analysis of science and engineering experts and the real-world operational assessment of USBP on the ground (DHS 2011).

The ATP will utilize existing, proven technology tailored to the distinct terrain and population density of each border region, including commercially available mobile surveillance systems, unmanned aircraft systems, thermal imaging devices and tower-based RVSS. Where appropriate, this technology plan will also include elements of the former *SBI*net that were proven successful, such as stationary radar and infrared and optical sensor towers (DHS 2011).

RVSS has been deployed since 1996 by USBP for surveillance along the United States' borders with Canada and Mexico. Currently, there are 300 RVSS deployed along the southwest border (DHS 2011). The existing RVSS consist of multiple remotely monitored and controlled color cameras and thermal imaging systems installed along the United States' borders that enable USBP to monitor large areas of the border. The RVSS enhance the situational awareness of USBP agents, aid their ability to respond to border incursions and increase agents' safety. The existing RVSS, in particular, are part of an older system that is becoming increasingly difficult and costly to maintain. The need to replace old RVSS, add new RVSS and increase the number of RVSS became a significant consideration in the overall reassessment of the *SBI*net program.

A recent assessment of existing Arizona RVSS determined that technology and operator interfaces were antiquated. To address these deficiencies, the ATP stipulates an upgrade of existing RVSS capabilities. This upgrade includes the replacement of existing RVSS equipment and installation of new cameras on existing RVSS towers, installation of new cameras on relocated towers and the construction of new RVSS towers for improved border surveillance coverage throughout Arizona. The new RVSS towers consist of a platform and day/night cameras. The replacement and installation of new surveillance and communications equipment and ongoing maintenance on existing towers and the construction of new RVSS towers are being addressed in two separate National Environmental Policy Act (NEPA) documents; and the scope of this Environmental Assessment (EA) is the construction of new RVSS towers throughout the USBP Tucson and Yuma sectors. Although both projects are part of the RVSS upgrade program, they are independent actions being conducted by different offices within CBP. The cumulative impacts of both of these actions will be addressed in this NEPA analysis. Prior NEPA documentation for legacy Immigration and Naturalization Service and CBP RVSS projects includes, but is not limited to:

- *Record of Environmental Consideration for Proposed Surveillance Equipment Installation, Yuma County, Arizona and Imperial County, California (August 31, 1998)*
- *Final Environmental Assessment for the Installation and Operation of a Relay Tower at Crawford Hill, United States Border Patrol, Nogales Station, Santa Cruz County, Arizona (November 2002)*
- *Final Environmental Assessment for the Installation and Operation of Nine Remote Video Surveillance Systems in the Tucson Sector, Cochise County, Arizona (January 2003)*
- *Final Environmental Assessment for the Installation and Operation of 15 Remote Video Surveillance Systems in the United States Border Patrol, Tucson Sector, Nogales Stations, Santa Cruz County, Arizona (September 2002)*

1.2 STUDY LOCATION

The tower sites proposed in the RVSS Upgrade Program (New Towers) are located in the USBP Tucson and Yuma sectors, Arizona, which include USBP Yuma, Ajo, Nogales, Naco and Douglas stations' Areas of Responsibility (AOR) in Cochise, Pima, Santa Cruz and Yuma counties, Arizona, and Imperial County, California (Figure 1-1). The proposed sites are located on Federal, state, tribal and private lands throughout southern Arizona and extreme southeastern California.

1.3 PURPOSE AND NEED

The purpose of the proposed project is to improve CBP's efficiency of detection, identification and apprehension of cross-border violators (CBVs). The objective is to provide persistent surveillance capability, command and control (C2), and sustainment of support capability along the United States/Mexico border within the affected USBP stations' AORs.

The proposed project would provide necessary decision support information to assist CBP officers and agents in the identification and resolution of border incursions. Information gathered from RVSS technology would further contribute to the comprehensive operability of the C2 facility. The C2 would also provide mechanisms to communicate comprehensive situational awareness, including information to incorporate intelligence-driven capabilities at all operational levels and locations.

The frequency and nature of illegal cross-border activities, as well as the geographic area over which these activities occur, create a need for a technology-based solution that can effectively collect, process and distribute the information among CBP agents and officers. The proposed RVSS Upgrade Program would procure capability for upgrading the existing RVSS, as well as deploy enhanced capability RVSS at fixed, elevated sites that provide persistent wide-area surveillance for the visual detection, tracking, identification and classification of illegal activities. The proposed sites for deployment of RVSS towers would allow CBP agents to spend less time in the field locating CBVs and focus efforts on effective interdiction of those involved in illegal cross-border activities.

Figure 1-1. Project Vicinity Map

The RVSS Upgrade Program (New Towers) is needed to:

- 1) provide visual detection for the apprehension of CBVs across the United States/Mexico border
- 2) offer improved performance (surveillance) of the United States/Mexico border
- 3) address obsolescence issues
- 4) enhance situational awareness
- 5) reduce life-cycle costs
- 6) improve/enhance RVSS survivability (i.e., paintball attacks, rocking, shooting)

1.4 SCOPE OF THE ANALYSIS

The scope of this EA includes the analysis of effects resulting from the construction, installation, operation and maintenance of up to 20 new RVSS towers in the Tucson and Yuma sectors. The analysis also includes the potential effects associated with the construction of 72 feet of access roads and improvement of 19.2 miles of approach roads. Approach roads are existing private or public roads used to travel to proposed RVSS sites. Access roads are short road segments from an approach road to a proposed RVSS site. This analysis does not include an assessment of current operations conducted in the field by USBP agents. Mission operations of USBP would continue regardless of whether or not this RVSS project is implemented.

1.5 APPLICABLE ENVIRONMENTAL GUIDANCE, STATUTES AND REGULATIONS

This analysis was prepared by CBP in accordance with the NEPA of 1969 (42 United States Code [U.S.C.] 4321-4347) and the Council on Environmental Quality (CEQ) guidelines for implementing NEPA (40 Code of Federal Regulations [C.F.R.] 1500-1508), DHS Directive 023-01 (previously numbered 5100.1) and other pertinent environmental statutes, regulations and compliance requirements (Table 1-1). This EA will be the vehicle for compliance with all applicable environmental statutes, such as the Endangered Species Act (ESA) of 1973, 16 U.S.C. Part §1531 et seq, as amended and the National Historic Preservation Act (NHPA) of 1966, 16 U.S.C. §470a et seq., as amended.

1.6 PUBLIC INVOLVEMENT

OTIA initiated public involvement and scoping activities as directed by 40 C.F.R. §1501.7, 1503 and 1506.6 to identify any significant issues related to the construction of new RVSS towers in Arizona and California. Consultation and coordination with Federal, state and local agencies and Federally recognized tribes began with site selection activities in June 2011. On February 13, 2012, a total of 57 agency coordination letters was issued to potentially affected Federal, state and local agencies and Federally recognized Indian tribes, inviting their participation and input regarding the proposed RVSS Upgrade Program (New Towers) project.

Table 1-1. Summary of Guidance, Statutes and Relevant Regulations Including Compliance Requirements

Issue	Acts Requiring Permit, Approval or Review	Agency	Permit, License, Compliance or Review/Status
Soils	Resource Conservation and Recovery Act of 1976, 42 U.S.C. § 6901 et seq., as amended	U.S. Environmental Protection Agency (EPA)	Proper management, and in some cases, permit for remediation
	Comprehensive, Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601 et seq., as amended	EPA	Development of emergency response plans, notification and cleanup
	Farmland Protection Policy Act of 1981, 7 U.S.C. § 4201 et seq. 7 C.F.R. 657-658 Prime and unique farmlands	Natural Resource Conservation Service (NRCS)	NRCS determination via Form AD-1006, if prime or unique farmlands are present
Natural Resources	Endangered Species Act of 1973, 16 U.S.C. § 1531 et seq., as amended	U.S. Fish and Wildlife Service (USFWS)	Consultation to assess impacts and, if necessary, develop mitigation measures
	Migratory Bird Treaty Act of 1918, 16 U.S.C. § 703 et seq.	USFWS	Consultation to assess impacts and, if necessary, develop mitigation measures
	Organic Administration Act (16 U.S.C. § 473, 475)	National Park Service (NPS)	Issuance of a special use permit by the land-managing agency
Land Use	Forest and Rangeland Renewable Resources Planning Act of 1978 (16 U.S.C. § 1606)	U.S. Forest Service (USFS)	Issuance of a special use permit by the land-managing agency
	Federal Land Policy Management Act (Public Law [P.L.] 94-579)	Bureau of Land Management (BLM)	Issuance of a special use permit by the land-managing agency
	National Historic Preservation Act of 1966 (16 U.S.C. § 470a et seq.)	Advisory Council on Historic Preservation (ACHP) through the State Historic Preservation Office (SHPO)	Section 106 Consultation
Cultural/ Archaeological	Archaeological Resources Protection Act of 1979 (16 U.S.C. § 470aa et seq.)	Affected land-managing agency	Permits to survey and excavate/remove archaeological resources on Federal lands; Native American tribes with interests in resources must be consulted prior to issue of permits
	Native American Graves Protection and Repatriation Act of 1990	Affected land-managing agency	Compliance by lead agency
	Indian Sacred Sites of 1996 (Executive Order [EO] 13007)	Affected land-managing agency and affected Native American tribe	Compliance by lead agency
	Consultation and Coordination with Indian Tribal Governments of 2000 (EO 13175)	Affected land-managing agency and affected Native American tribe	Compliance by lead agency

Table 1-1, continued

Issue	Acts Requiring Permit, Approval or Review	Agency	Permit, License, Compliance or Review/Status
Cultural/ Archaeological, continued	Government-to-Government Relations with Native American Tribal Governments of 1994 (Presidential Memorandum)	Affected land-managing agency and affected Native American tribe	Compliance by lead agency
Air	Clean Air Act, and amendments of 1990 (U.S.C. § 7401 et seq.)	EPA, Arizona Department of Environmental Quality (ADEQ) and California Air Resources Board (CARB)	Compliance with National Ambient Air Quality Standards (NAAQS) and emission limits and/or reduction measures; conformity to <i>de minimis</i> thresholds; preparation of a Record of Non-Applicability
Water	Federal Water Pollution Control Act of 1977 (also known as the Clean Water Act [CWA]) (33 U.S.C. § 1251 et seq.)	EPA	Section 402(b) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges for Construction Activities-Stormwater Pollution Prevention Plan (SWPPP)
	EO 11988 (Floodplain Management), 42 Federal Register (FR) 26,951 (May 24, 1997), as amended.	Water Resources Council, Federal Emergency Management Agency (FEMA), CEQ	Compliance
	EO 11990 (Protection of Wetlands), 42 FR 26,691 (May 24, 1977), as amended	U.S. Army Corps of Engineers (USACE) and USFWS	Compliance
	CWA of 1977 (33 U.S.C. § 1341 et seq.)	USACE, Arizona Department of Water Resources (ADWR) and California's Regional Water Quality Control Board	Section 401/404 Permit
Social/ Economic	EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) of 1994, 59 FR 7629 (February 11, 1994)	EPA	Compliance
Sound/Noise	Noise Control Act of 1972, 42 U.S.C. § 4901 et seq., as amended	EPA	Compliance with surface carrier noise emissions
Telecommunications	Federal Communications Commission, Spectrum Allocations, Rates and Regulations (47 C.F.R. Part 2)	National Telecommunications and Information Administration (NTIA)	Approval from NTIA

Table1-1, continued

Issue	Acts Requiring Permit, Approval or Review	Agency	Permit, License, Compliance or Review/Status
Health and Safety	Occupational Health and Safety Act of 1970, 29 U.S.C. § 651 et seq.	Occupational Safety and Health Administration (OSHA)	Compliance with guidelines including Material Safety Data Sheets
	14 C.F.R. Part 77 § 9, Federal Aviation Administration (FAA) Form 7460-1, Notice of Proposed Construction or Alteration	FAA	Notification required for construction or alteration of structures exceeding 200 feet above ground level

Coordination was conducted with the following agencies and Federally recognized tribes:

- U.S. Department of the Interior (DOI)
 - BLM
 - USFWS: Arizona Ecological Service Office (AESO) and Carlsbad Ecological Services Office
 - NPS: Organ Pipe Cactus National Monument (OPCNM)
 - Bureau of Reclamation (Reclamation)
- U.S. Section, International Boundary and Water Commission
- U.S. Department of Agriculture (USDA)
 - NRCS
 - USFS
- EPA
- FAA
- NTIA
- Arizona Game and Fish Department (AGFD)
- Arizona SHPO
- ADEQ
- Arizona State Lands Department (ASTL)
- Private landowners
- California Department of Fish and Game (CDFG)
- California Environmental Protection Agency
- California Department of Transportation (Caltrans)
- California SHPO
- Cochise County
- Pima County
- Santa Cruz County
- Yuma County
- Imperial County
- Tohono O'odham Nation
- Fort Sill Apache Tribe of Oklahoma
- White Mountain Apache Tribe
- Hopi Tribe
- Mescalero Apache Tribe
- Quechan Tribe
- Cocopah Tribe

On June 6, 2012, OTIA released the draft EA and proposed Finding of No Significant Impact (FONSI) to the public for review and comment. A Notice of Availability (NOA) for the draft EA and proposed FONSI was published in the *Arizona Daily Star*, *Yuma Sun*, *Ajo Copper News*, *Nogales International*, *Douglas Dispatch* and *Bisbee Observer* newspapers on June 6, 2012 to solicit comments on the proposed project. Proof of publication of the NOA is included in Appendix A. The draft EA and proposed FONSI were also available for download from CBP's Internet Web page at the following URL address: http://www.cbp.gov/xp/cgov/border_security/

otia/sbi_news/sbi_enviro_docs/nepa. The draft EA was also available for review at the following libraries from June 6, 2012 to July 6, 2012:

- Yuma County Main Library, 2951 S. 21st Drive, Yuma, Arizona 85634
- Ajo Public Library, 33 N. Plaza Street, Ajo, Arizona 85321
- Nogales-Santa Cruz County Public Library, 518 North Grande Avenue, Nogales, Arizona 85621
- Copper Queen Library, 6 Main Street, Bisbee, Arizona 85603
- Douglas Public Library, 560 Tenth Street, Douglas, Arizona 85607

Prior to the deadline, comment letters were received from Caltrans, California Department of Toxic Substances Control, Arizona SHPO, AGFD, ADEQ, Reclamation, OPCNM and Native American Heritage Commission. Several other letters were received after the close of the public comment period. The comment letters and CBP's responses to the comments are provided in Appendix A, and each comment was addressed, as applicable.

After the Draft EA was released, OTIA decided, due to overall program assessments, to not construct two towers (TCA-AJO-0523 and TCA-AJO-0553) at this time. However, the analyses in this EA still include these two towers in the event funding becomes available and the towers are still needed.

1.7 REPORT ORGANIZATION

This EA is organized into eight major sections, including this introduction. Section 2.0 describes all alternatives considered for the project. Section 3.0 discusses the environmental resources potentially affected by the project and the environmental consequences for each of the viable alternatives. Section 4.0 discusses cumulative impacts, and best management practices (BMPs) are discussed in Section 5.0. Sections 6.0, 7.0 and 8.0 present a list of the references cited in the document, a list of acronyms and abbreviations used in the document and a list of the persons involved in the preparation of this document, respectively. Scoping issues and public comments generated during the preparation of this EA can be found in Appendix A. Appendix B contains RVSS Upgrade Program (New Towers) tower site maps. Soil maps of all sites can be found in Appendix C. A list of wildlife species observed during the biological survey of the proposed RVSS tower sites is provided in Appendix D. The Arizona Natural Heritage Program (ANHP) Special Status Species Lists and CDFG protected species list are provided in Appendix E. Air quality calculations used in this analysis can be found in Appendix F.

SECTION 2.0
PROPOSED ACTION AND ALTERNATIVES



2.0 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action and two alternatives (Alternative 1 and the No Action Alternative) were identified and considered during the planning stages of the proposed project. The Proposed Action consists of the construction of up to 20 towers at preferred sites. Alternative 1 consists of the construction of up to 20 towers, 14 towers at preferred sites and 6 towers at alternate sites. Under the No Action Alternative, no RVSS towers would be constructed. The following paragraphs describe the tower site selection process that determines whether, and the extent to which, a particular location is suitable as a tower site, as well as how alternate tower sites were selected.

2.1 ALTERNATIVES AND ALTERNATIVE SELECTION

As the proponent agency of the proposed RVSS Upgrade Program (New Towers), CBP developed a range of action alternatives and alternate tower sites, taking into consideration how each best meets the purpose and need and the potential effects on the environment. Alternatives that failed to meet the purpose of this project were eliminated from further analysis and are discussed in Section 2.6 below. CBP first considered various types of surveillance systems and approaches to border surveillance, including a review of the use of different types of border surveillance equipment capable of providing spatially and temporally continuous surveillance across the entire affected region of this project. Each of these alternatives was fully evaluated based on its ability to meet the project's purpose and need, operability, potential impacts on the environment and the costs in terms of time and human resources needed to achieve interdictions of CBVs.

The Proposed Action and Alternative 1 (described in Sections 2.3 and 2.4) meet the purpose and need of this project within the constraints of environmental and operational considerations. The No Action Alternative, described in Section 2.5, is assessed as required by NEPA and 40 C.F.R. § 1502.14 and serves as a baseline for the comparison of potential effects associated with the Proposed Action and Alternative 1.

The proposed new RVSS towers are intended to augment and improve the existing system of RVSS towers in the Tucson and Yuma sectors. The ATP identified RVSS as the most appropriate surveillance technology for the environment within the project area and its characteristic terrain, as well as meeting operational requirements. RVSS contribute to situational awareness and agent safety, and are a preferred solution in certain rural and remote areas that are difficult to access and/or where USBP has a need for long-term/permanent surveillance because of persistent cross-border threats. The updated RVSS contribute to both the persistent surveillance and the C2 capabilities required by USBP agents to respond to the evolving threats posed by illegal intrusions.

2.2 CRITERIA FOR TOWER SITE SELECTION

The RVSS site selection process identifies potentially suitable tower site locations and their alternatives. Key tower site evaluation considerations take into account constructability, operability, real estate availability and environmental factors. The site selection process began

with identification of candidate tower sites based on an initial operational needs assessment from USBP agents in the Tucson and Yuma sectors. This initial set of candidate sites was assessed for the sites' abilities to meet access, construction, operational, real estate and environmental requirements. This review process resulted in multiple conceptual field laydowns, where optimal surveillance capability could be achieved with a minimum number of tower sites using mapping programs and modeling and analysis. A total of 36 sites was included as part of the initial field laydown.

Preliminary site surveys were conducted in June 2011 at the 36 candidate field laydown sites, following the analyses with mapping programs, modeling and simulation of terrain types and achievable surveillance coverage requirements by CBP and DHS personnel. Operationally preferred site locations were selected by CBP personnel based on their knowledge of the terrain, environment, land ownership and operational needs. This selection process was iterated until optimal surveillance and communications capabilities were deemed achievable.

After a conceptual field laydown of candidate tower sites was agreed to by CBP, the project's environmental, construction and operational team personnel, including CBP's DOI and USDA partners, conducted site visits and completed site visit reports, with site-ranking matrices for each site. During site visits, project team personnel used site-ranking criteria to establish whether sites exhibited exclusionary, restrictive and/or selective characteristics from accessibility, constructability, operability or environmental criteria perspectives. Exclusionary sites are those candidate sites that were eliminated from further consideration as viable tower site locations because of terrain, operational or environmental issues that have rendered an RVSS tower inaccessible, unconstructable or non-operational. Restrictive sites require some alterations to tower design or construction, or otherwise require minor mitigations to prevent adverse impacts on the environment. Selective sites were those that presented no constraints from an operational, constructability, design, engineering or environmental perspective.

Of the candidate sites surveyed, eight sites were excluded. These excluded sites and the reasons for their elimination as proposed tower sites are summarized in Table 2-1.

Table 2-1. Candidate Sites Proposed but Eliminated

Tower ID	Reason for Elimination
YUM-YUS-0537	Real Estate
YUM-YUS-0541	Real Estate
YUM-YUS-0545	Real Estate
TCA-AJO-0519	Real Estate
TCA-NGL-0513	Accessibility
TCA-NCO-0527	Constructability
TCA-NCO-0530	Operability
TCA-NCO-0569	Technical

In addition, YUM-YUS-0539 and TCA-AJO-0551 were initially identified in the Draft EA as an alternate and preferred tower site, respectively; but upon further analyses, these towers were eliminated from consideration due to operational and technical deficiencies. A total of 26 RVSS sites (20 preferred and 6 alternate sites) are carried forward for analysis in this EA.

2.3 PROPOSED ACTION

The Proposed Action described in this EA represents part of CBP's plan to develop border surveillance and communications technology and supporting infrastructure along the United States/Mexico border in the Tucson and Yuma sectors. Technology to be considered in the design includes day/night cameras and other surveillance assets. Infrastructure development included in this plan consists of roadways to and from the proposed RVSS tower sites.

Tower Sites

The Proposed Action includes the construction, operation and maintenance of up to 20 new RVSS towers at preferred sites to provide long-term/permanent surveillance in the USBP Tucson and Yuma sectors (Table 2-2 and Figures 2-1 through 2-5). The Proposed Action also includes the modification of an RVSS C2 room at each of five USBP stations, which integrates and displays data from all RVSS towers deployed within the affected station's AOR. Each RVSS tower would be equipped with day/night cameras and communications and support equipment. The Proposed Action requires the construction of two access roads (approximately 72 feet) and improvement of 14 approach roads (approximately 19.2 miles). The new access roads would typically be constructed to provide a 12-foot-wide driving surface with 2-foot shoulders on each side (16 feet total width). Road construction consists of blading native material and installation of drainage structures, as appropriate. Road improvements consist of reconstruction, widening or straightening of existing roads and installation of drainage structures.

Table 2-2. Proposed Action RVSS Tower Sites

	RVSS Site	Ajo Station	Douglas Station	Naco Station	Nogales Station	Yuma Station
1.	YUM-YUS-0533					P
2.	YUM-YUS-0535					P
3.	YUM-YUS-0543					P
4.	YUM-YUS-0547					P
5.	YUM-YUS-0571					P
6.	YUM-YUS-0573					P
7.	YUM-YUS-0575					P
8.	YUM-YUS-0577					P
9.	TCA-AJO-0523*	P				
10.	TCA-AJO-0553*	P				
11.	TCA-NGL-0505				P	
12.	TCA-NGL-0507				P	
13.	TCA-NGL-0509				P	
14.	TCA-NGL-0511**				P	
15.	TCA-NGL-0555				P	
16.	TCA-NCO-0525			P		
17.	TCA-NCO-0529			P		
18.	TCA-NCO-0567			P		
19.	TCA-DGL-0557		P			
20.	TCA-DGL-0565		P			

P=Preferred

* Will not be constructed at this time due to program assessments.

** TCA-NGL-0511 was included as part of the SBInet Tucson West Tower Project EA (CBP 2008).

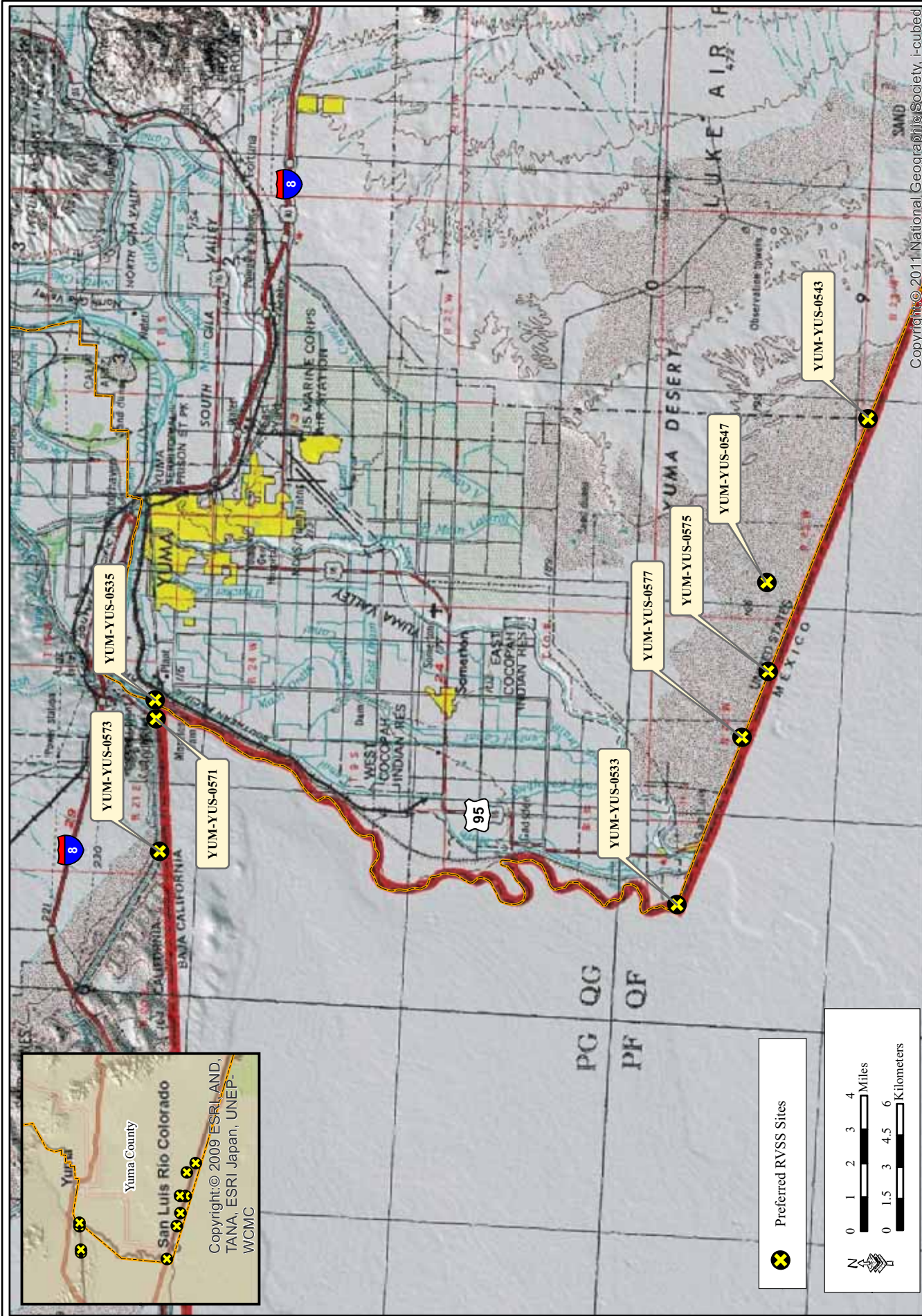


Figure 2-1. Proposed Action RVSS Tower Sites in Yuma Station's AOR

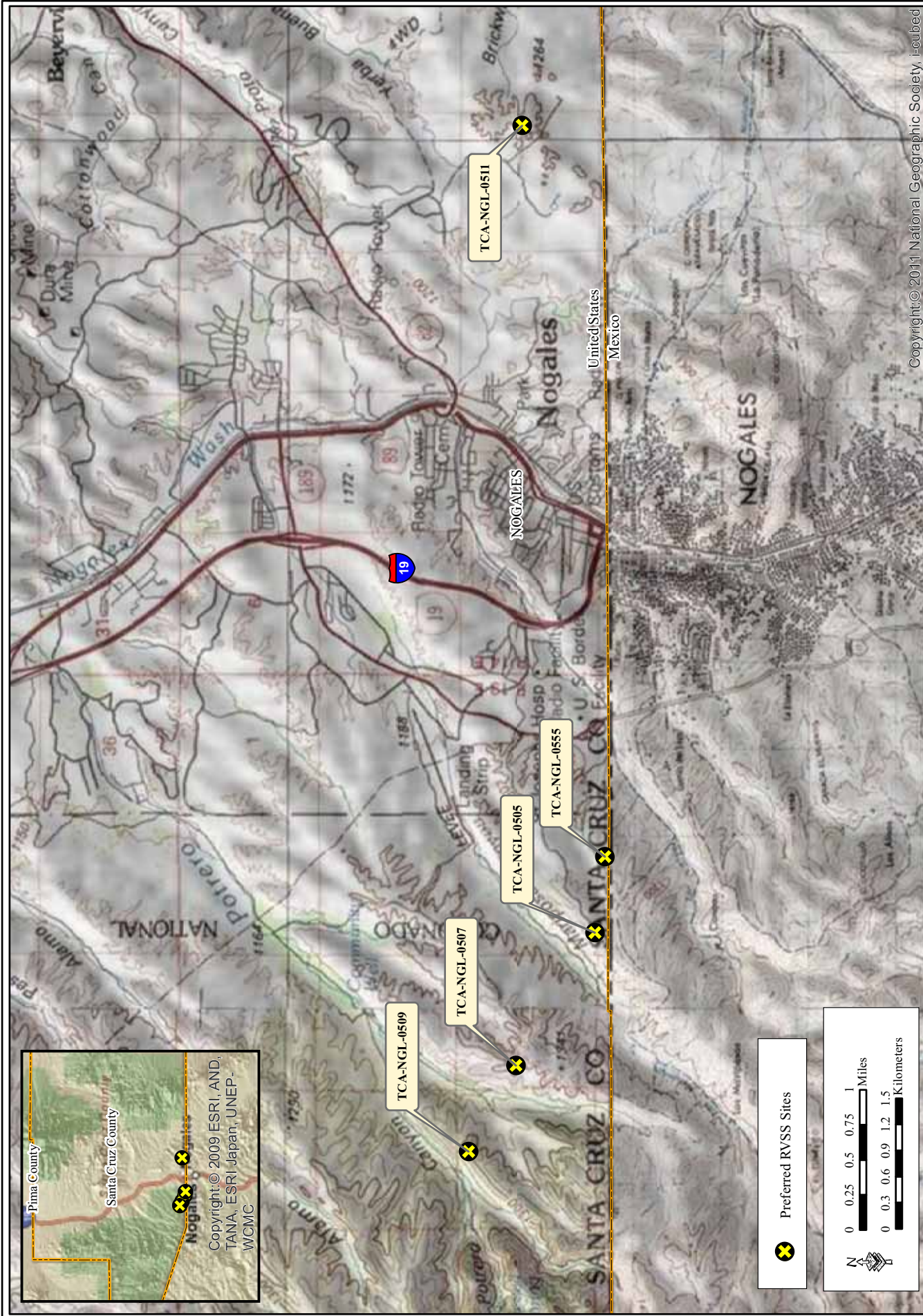
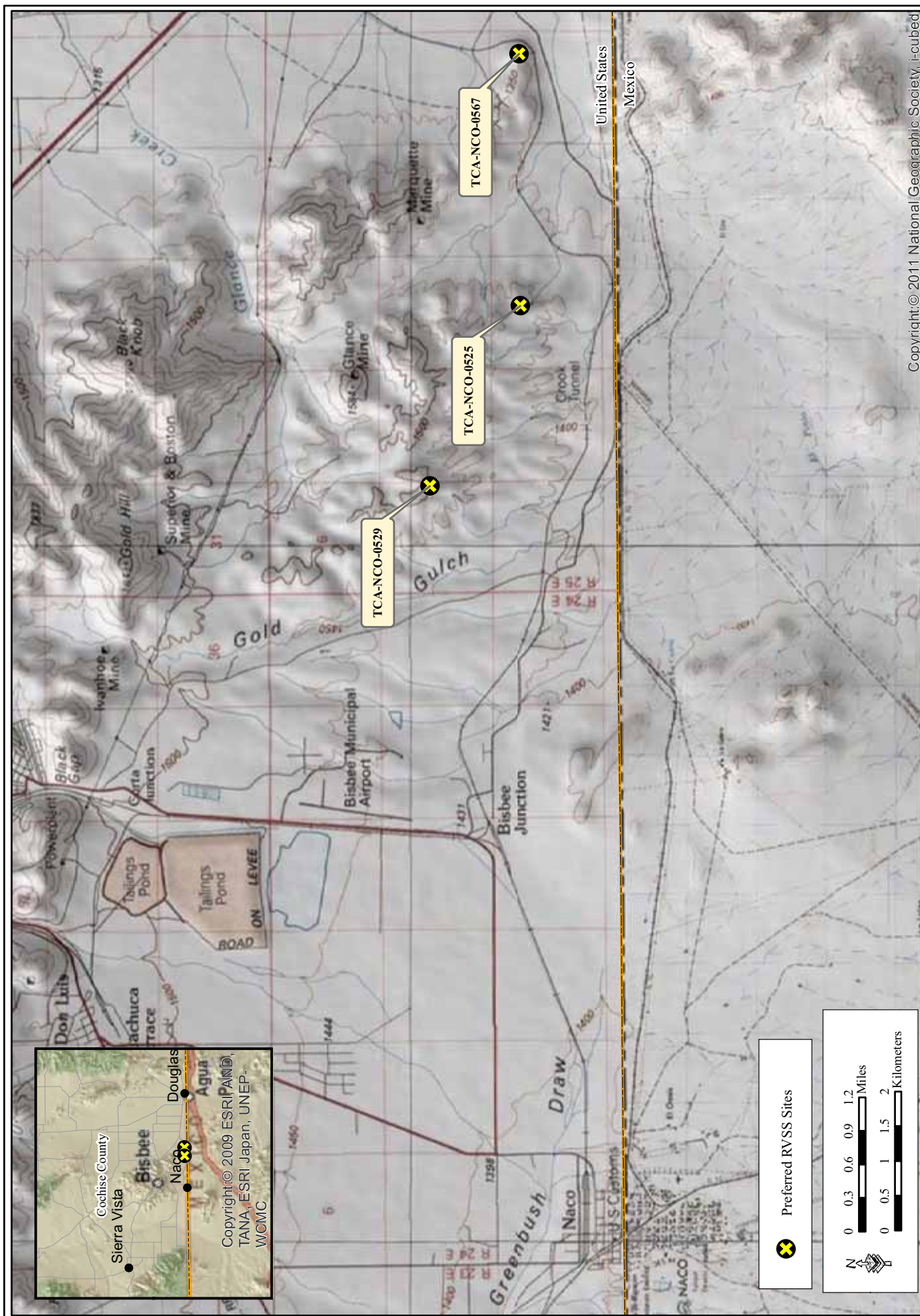


Figure 2-3. Proposed Action RVSS Tower Sites in Nogales Station's AOR



Copyright © 2011 National Geographic Society, i-cubed



August 2012

Figure 2-4. Proposed Action RVSS Tower Sites in Naco Station's AOR

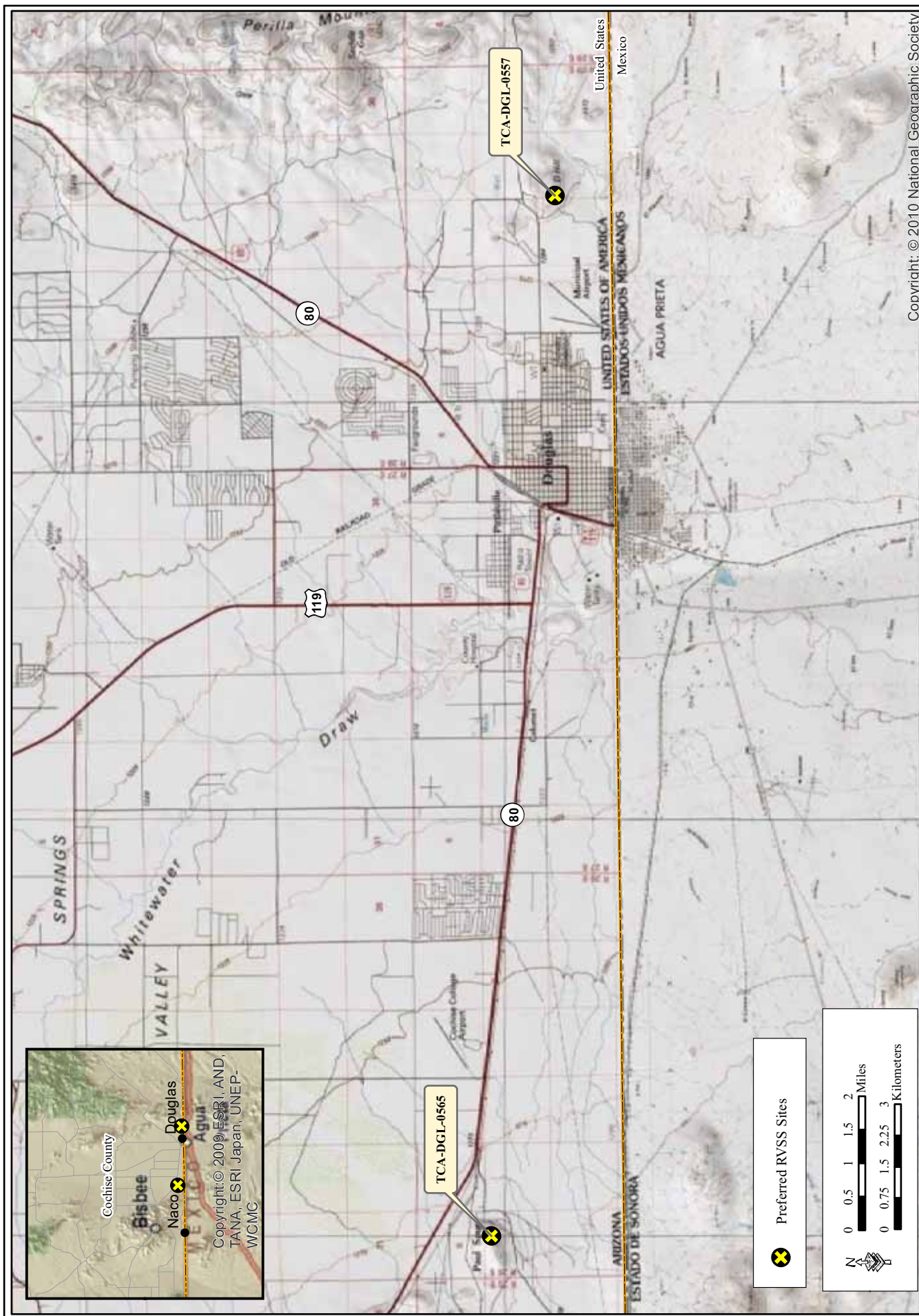


Figure 2-5. Proposed Action RVSS Tower Sites in Douglas Station's AOR

2.3.1 Tower Characteristics

The proposed RVSS towers consist of a monopole tower design with a platform on top of the tower. Monopole towers are metal, self-supporting single pole towers with cement foundations (Figure 2-6 and Photograph 2-1). The depth of each tower foundation is dependent on geotechnical characteristics at each tower site. The proposed monopole height for this Proposed Action would be approximately 80 feet. The platform is the mounting structure for the camera(s) and other equipment.

Each tower has subsequent design, power requirements and site and fence enclosure footprint as described below, unless otherwise noted in the detailed proposed tower site discussions provided in Table 2-3.



Photograph 2-1. Typical RVSS tower.

Tower Footprint

Construction of RVSS tower sites is expected to result in ground disturbance confined to a 200-foot x 200-foot area (Figure 2-7 and 2-8) (CBP 2012b). All staging of construction equipment and materials, as necessary, would occur within this footprint during construction. Each permanent tower site footprint is expected to be 100 x 100 feet, including the 50-foot x 50-foot tower site. Support activities such as grounding, trenching and grading would occur within the 100-foot x 100-foot permanent tower site footprint. The entire 100-foot x 100-foot permanent impact areas may be cleared and grubbed in preparation for RVSS unit construction.

The tower site footprint is confined to the dimensions mentioned above. Regardless of each RVSS site's configuration, the total area of temporary construction disturbance for each site would not exceed 30,000 square feet (40,000 square feet – 10,000 square feet) and the permanent disturbance would not exceed 10,000 square feet.

Tower Perimeter Fence Enclosure

Each tower site meets the minimum security requirements as outlined in CBP's Memorandum for Record titled *Minimum Physical Security Requirements for CBP/OTIA Fixed Tower Sites* and dated December 8, 2011 (DeNayer 2011). Up to a 2,500-square-foot area (50 feet x 50 feet) at each RVSS site would be enclosed with chain-link fence. The perimeter fence would be erected to prevent unauthorized access and would consist of a minimum 7-foot-high chain-link fence, with a 1-foot barbed-wire outrigger, for a total height of 8 feet.

Tower Power Sources

Primary power for RVSS towers uses commercial grid power (where available) or solar panel-charged batteries. Towers with alternative power sources typically include either a propane-fueled generator or hydrogen fuel cells (Figures 2-7 and 2-8). A fuel tank for propane-fueled generators would be installed at the tower sites, where applicable. Generators would be housed within an enclosure and would have a spill containment basin of sufficient size to contain the total engine fluids.

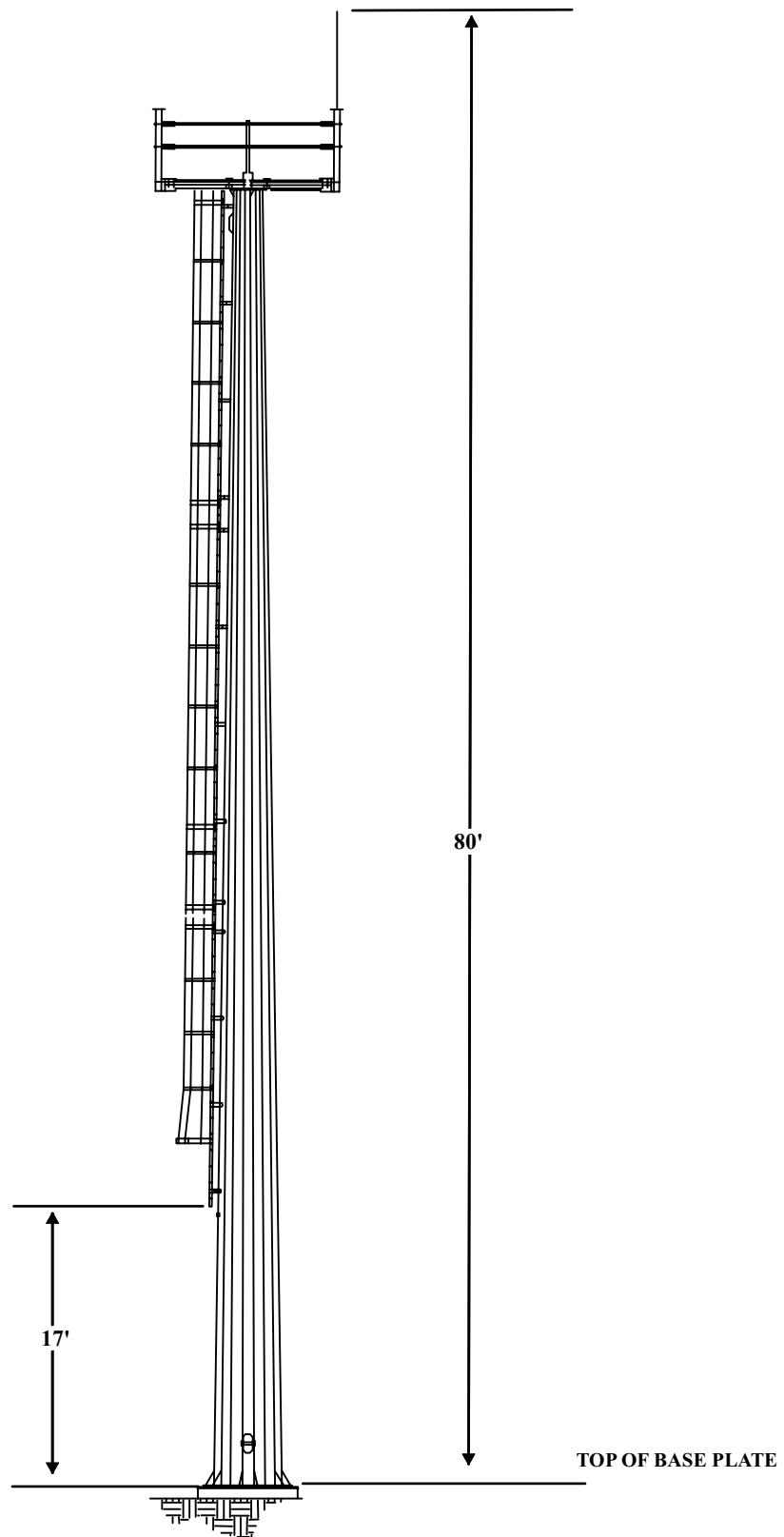


Figure 2-6. Typical Monopole Tower Profile

Table 2-3. Proposed Action Tower Site Data and Configuration

Tower Name	YUM-YUS-0533	YUM-YUS-0535	YUM-YUS-0543	YUM-YUS-0547	YUM-YUS-0571	YUM-YUS-0573	YUM-YUS-0575	YUM-YUS-0577	TCA-AJO-0523	TCA-AJO-0553
Tower Function	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS
Basic Site Conditions										
Construction staging/footprint area (temporary)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)
Tower site footprint (permanent)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)
Access road construction and approach road improvement (length/width and surface treatment)	None needed	Approach road improvements with 30-foot construction limit (18' x 523'); with 10-foot temporary easement (10' x 523')	None needed	None needed	Approach road improvements with 30-foot construction limit (18' x 58'); with 10-foot temporary easement (10' x 58')	Approach road improvements: 40-foot construction limit (28' x 50'), 45-foot construction limit (33' x 100'), 55-foot construction limit (43' x 150'), 65-foot construction limit (53' x 100'), 100-foot construction limit (88' x 200'), 170-foot construction limit (158' x 100'), and with 10-foot temporary easement (10' x 700')	Approach road improvements with 30-foot construction limit (18' x 8,534'); with 10-foot temporary easement (10' x 8,534')	Approach road improvements with 30-foot construction limit (18' x 8,322'); with 10-foot temporary easement (10' x 8,322')	Access road construction (25' x 16') with 10-foot temporary easement (10' x 25'); and approach road improvements with 30-foot construction limit (18' x 11,170'), three concrete low water crossings (26' x 364') and 10-foot temporary easement (10' x 11,170')	Approach road improvements with 30-foot construction limit (18' x 18,695'), with 50-foot construction limit (1,584' x 38'), two concrete low-water crossings (26' x 357') and with 10-foot temporary easement (10' x 20,279')
Impact area associated with road construction, repair and improvement	Not applicable	Approach road improvements (0.22 acre permanent and 0.12 acre temporary)	Not applicable	Not applicable	Approach road improvements (0.02 acre permanent and 0.01 acre temporary)	Approach road improvements (1.14 acre permanent and 0.17 acre temporary)	Approach road improvements (3.53 acres permanent and 2.0 acres temporary)	Approach road improvements (3.44 acres permanent and 2.0 acres temporary)	Access road construction (0.009 acre permanent and 0.006 temporary); and approach road improvements (4.83 acre permanent and 2.6 acres temporary)	Approach road improvements (9.32 acres permanent and 4.7 acres temporary)
Dimension, height and type of security fence for this site	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8'chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8'chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8'chain-link w/barbed wire	50' x 50' x 8'chain-link w/barbed wire
Land manager/ownership	BLM	BLM	Reclamation	Reclamation	Quechan Tribe	Reclamation	CBP	CBP	NPS	NPS
Tower Description										
Tower height and construction type	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole
Spotlight	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
Laser illuminator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Camera obscuration	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
Power Description										
Planned Power System(s)	Grid power/generator	Grid power/generator	Dual Power System	Grid power/generator	Dual Power System	Dual Power System	Grid power/generator	Grid power/generator	Solar	Solar
Fuel type and tank capacity for generator, if required	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Not Applicable	Not Applicable

Table 2-3, continued

Tower Name	TCA-NGL-0505	TCA-NGL-0507	TCA-NGL-0509	TCA-NGL-0511	TCA-NGL-0555	TCA-NCO-0525	TCA-NCO-0529	TCA-NCO-0567	TCA-DGL-0557	TCA-DGL-0565
Tower Function	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS
Basic Site Conditions										
Construction staging/footprint area (temporary)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)
Tower site footprint (permanent)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)
Access road improvements and construction (length/width and surface treatment)	None needed	Approach road improvements with 40-foot (18' x 3,892') and 50-foot (38' x 3,751') construction limits; with 10-foot (10' x 7,643') temporary easement	None needed	Approach road improvements with 60-foot (48' x 3,490') construction limits; 10-foot (10' x 3,490') temporary easement	None needed	Approach road improvements with 30-foot (18' x 3,696'), 40-foot (28' x 6,864'), and 50-foot (38' x 4,752') construction limits; with 10-foot (10' x 15,312') temporary easement	Approach road improvements with 40-foot (28' x 6,336') and 50-foot (38' x 6,336') construction limits; with 10-foot (10' x 12,672') temporary easement	Approach road improvements with 30-foot (18' x 3,168') and 50-foot (38' x 2,284') construction limits; with 10-foot (10' x 5,452') temporary easement	Approach road improvements with 50-foot construction limit (38' x 2,896'); with 10-foot (10' x 2,896') temporary easement	Access road construction (16' x 47'); with 10-foot temporary easement (10' x 47'); and approach road improvements with 30-foot (18' x 1,690') 50-foot (38' x 2,258'), and 60-foot (48' x 400') construction limits; with 10-foot temporary easement (10' x 4,348')
Impact area associated with road construction, repair and improvement	Not applicable	Approach road improvements (4.88 acres permanent and 1.8 acres temporary)	Not applicable	Approach road improvements (3.85 acres permanent and 0.80 acre temporary)	Not applicable	Approach road improvements (10.08 acres permanent and 3.5 acres temporary)	Approach road improvements (9.6 acres permanent and 2.9 acres temporary)	Approach road improvements (3.3 acres permanent and 1.2 acres temporary)	Approach road improvements (2.53 acres permanent and 0.66 acre temporary)	Access road construction (0.2 acre permanent and 0.011 acre temporary); and approach road improvements (3.11 acres permanent and 1.0 acres temporary)
Dimension, height and type of security fence for this site	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire	50' x 50' x 8' chain-link w/barbed wire
Land manager/ownership	USFS	USFS	USFS	Private	USFS	ASTL	Private	Private	ASTL	Private
Tower Description										
Tower height and construction type	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole	80' Monopole
Spotlight	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No
Laser illuminator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Camera obscuration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power Description										
Planned Power System(s)	Dual Power System	Dual Power System	Dual Power System	Dual Power System	Dual Power System	Dual Power System	Dual Power System	Dual Power System	Dual Power System	Dual Power System
Fuel type and tank capacity for generator, if required	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons	Propane 120 gallons

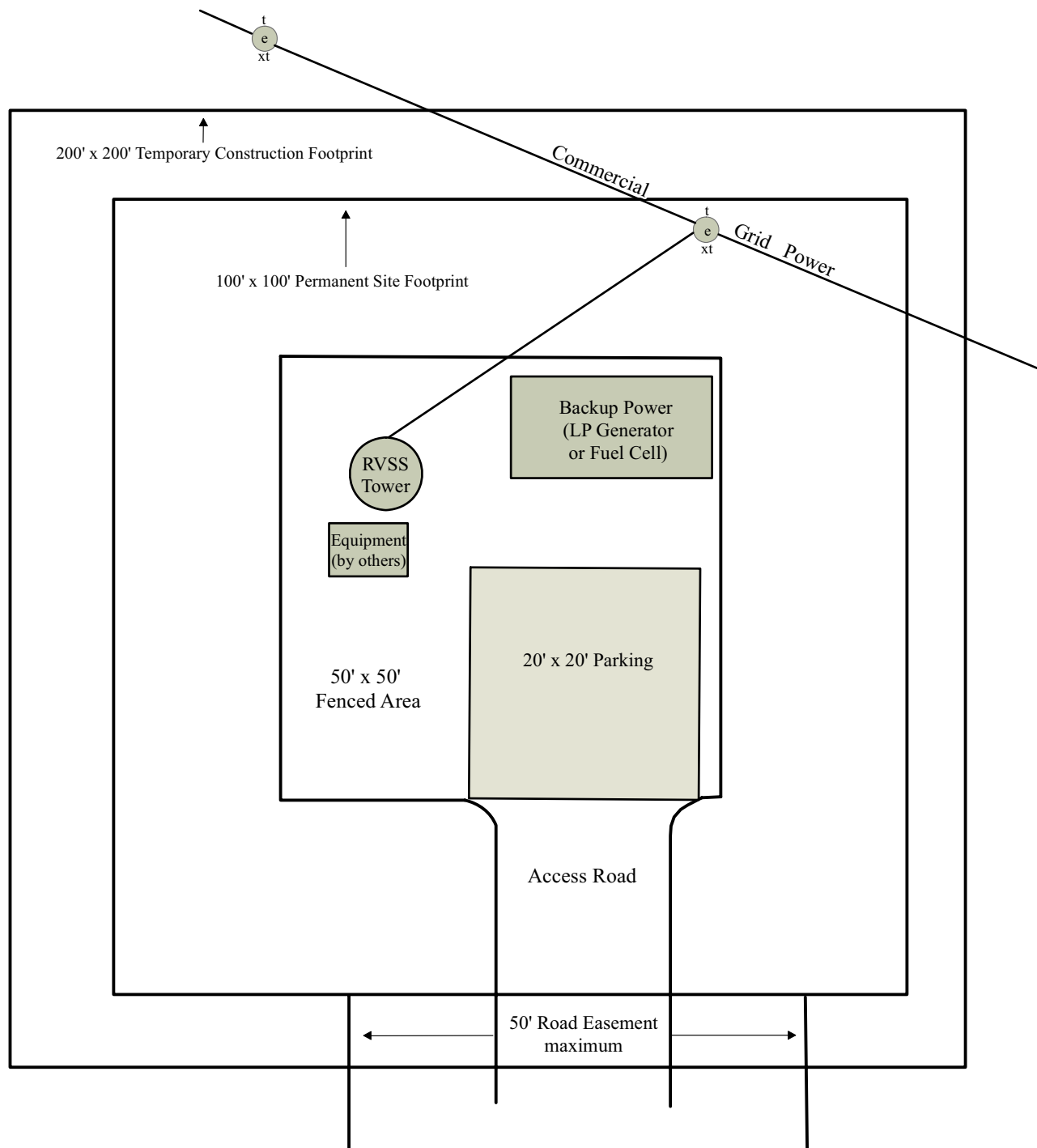
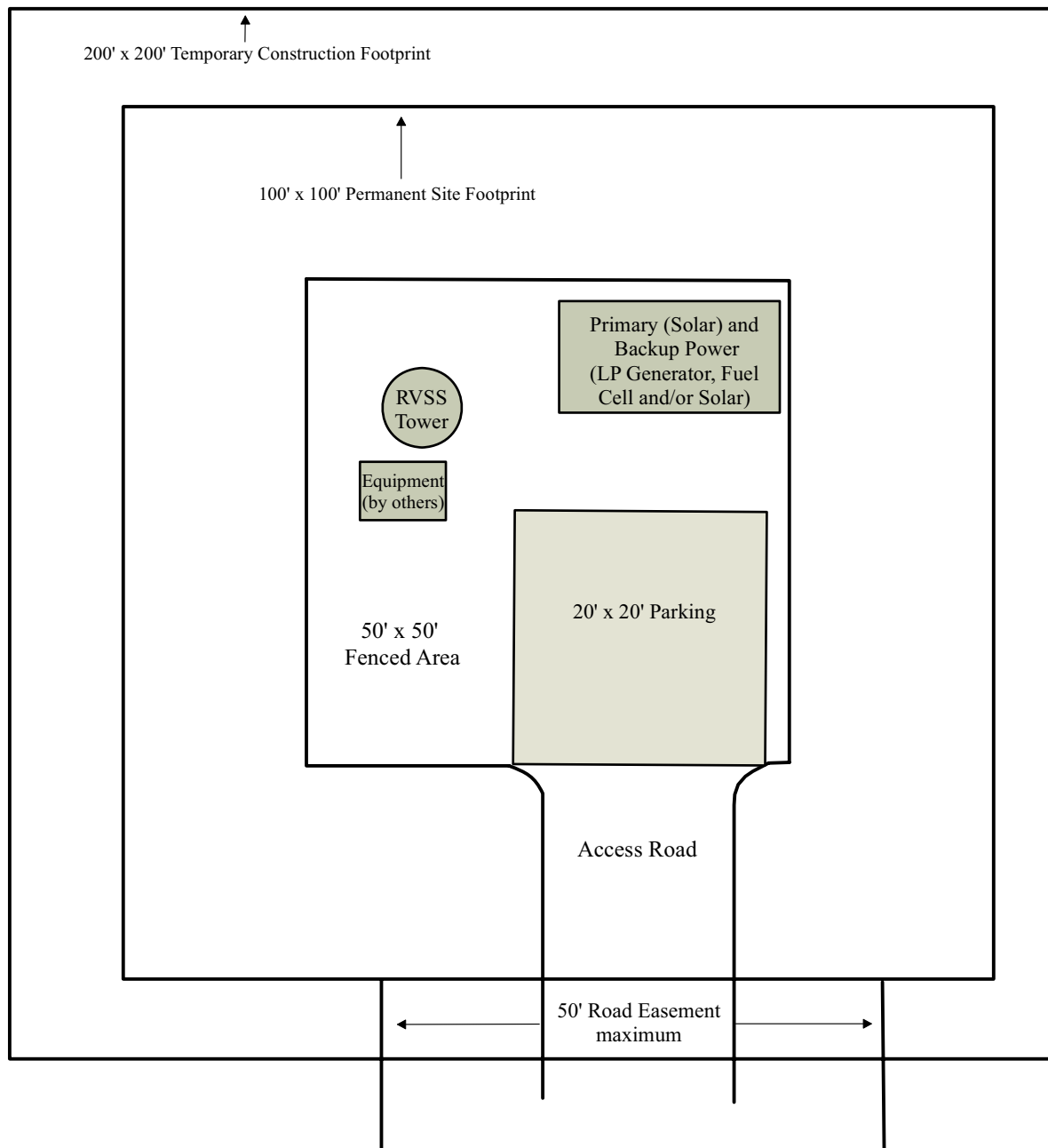


Figure 2-7. Notional Site Layout with Commercial Grid Power



NOT TO SCALE

Figure 2-8. Notional Site Layout with Alternative Power Source

Tower sites not on commercial grid power are designed for a 50-amp load. Towers will use an alternative power source (solar panels, hydrogen fuel cells and/or propane generator) for a minimum of two months until grid power can be provided, where applicable.

Commercial Grid Power

If commercial power is utilized, the grid power design is site-specific; however, commercial grid power would be overhead leading up to the permanent disturbed area and then underground where it enters the 50-foot x 50-foot fenced tower site (see Figure 2-7). The installation of overhead or buried lines at the RVSS tower site would be placed within surveyed road construction buffer areas, to the extent possible, all of which would be verified to identify potential impacts on biological and cultural resources along access roads.

Camera, Communications and Support Equipment

Typical designs for the proposed RVSS towers consist of camera suites, communications and support equipment (i.e., spotlight). Camera suites include multiple cameras (daylight and/or infrared and video cameras). The proposed RVSS towers would be equipped with either short-range, medium-range or long-range cameras, or a combination of each, depending on the geographical area. Communications equipment could consist of microwave antennas or fiber optics (where commercial grid power is available) to transmit data to the C2 facility.

The exact number and type of equipment would depend on the number and types of cameras and antennas needed for the area to be monitored, communications links required and other design variables. Equipment is mounted on the platform at the top of each tower. Cameras and antennas would be installed at heights that would ensure satisfactory line-of-sight and provide clear pathways for transmission of information to C2 facilities. Towers generally require line-of-sight to ensure unobstructed microwave transmission signals from the RVSS tower to the C2 facility. All transmit frequencies for the selected vendor's equipment will require NTIA radio frequency (RF) authorization.

Support equipment consists of illumination equipment (laser or spotlights) and devices to obscure surveillance equipment (see Table 2-3). All proposed towers are equipped with a laser illuminator (LI); however, not all towers are equipped with spotlights. A list of proposed equipment by tower site is provided in Table 2-3. Use of the LI would be in accordance with a February 22, 2006 user variance and user restrictions letter (Food and Drug Administration [FDA] Docket No. 00V-1410) issued by the FDA's Department of Health and Human Services and a June 4, 2008 CBP/Office of Border Patrol Information and Technology Branch's "Authorization for Class IIIB Lasers," which sets forth LI use parameters, restrictions and conditions. To ensure the safety of CBP agents and officers and the general public, LIs would be mounted on the tower structure at least 60 feet above ground level. LIs would be used to enhance USBP's detection and response efforts and would not be operated continuously. CBP prepared NEPA categorical exclusion documentation on the installation and use of LI on CBP surveillance towers in March 2011, concluding that the use of LI for routine monitoring and surveillance activities did not pose any impact on the human or natural environment.

The proposed spotlights are capable of visibly illuminating an item of interest at a range of up to 300 yards from a RVSS tower. The proposed spotlight provides up to 5 foot-candles of illumination at 300 yards. Currently, it is anticipated that the spotlights would be used at 12 towers, twice a night for a period of approximately 5 minutes for each use (see Table 2-3).

2.3.2 Construction of RVSS Towers

The permanent RVSS tower site footprints (100-foot x 100-foot or 10,000 square feet) would be mechanically cleared of vegetation and graded for the construction of RVSS towers. A 200-foot x 200-foot temporary construction area would be established around the permanent tower footprint (see Figure 2-8). All construction vehicle and equipment parking and staging of materials would be within the 200-foot x 200-foot temporary construction area. Following construction, the temporary disturbance area would be restored.

The following is a list of heavy equipment expected to be used during the construction, inspection and operational testing of equipment:

- Front-end loader or equivalent
- Excavator
- Water truck
- Crane
- Drill rig
- Concrete pumper
- Bulldozer
- Dump trucks (up to two)
- Concrete trucks (up to two)
- Crew trucks (up to six)

The total time for all phases of construction, including inspection and operational testing of equipment, for each proposed RVSS tower site is expected to be approximately 60 days. Construction activities are anticipated to begin in October 2012. Camera installation requires approximately 2 to 5 days per RVSS tower site.

2.3.3 Operation and Maintenance of RVSS Towers

If so equipped, generators are expected to operate a total of 4 to 8 hours per day to bulk-charge system batteries. Generator run times for systems connected to the commercial power grid would be limited to 1 hour twice per month for maintenance purposes and system conditioning. If commercial grid power is interrupted, backup generators would operate temporarily, as needed, until grid power is again available.

Tower site maintenance includes refueling of generators, as well as changing oil, oil filter and spark plugs. Currently, it is anticipated that up to one maintenance trip per month is required at each of the proposed RVSS towers. This trip includes maintenance and/or refueling efforts.

2.3.4 Road Construction, Repair, Improvement and Maintenance

Improvements of roads are required to move construction equipment, materials and personnel to and from the proposed tower sites during construction. Access road construction is required to provide access from approach roads to the proposed RVSS towers sites.

Road Construction

Two access roads totaling approximately 0.01 mile (72 feet) in length would be constructed to provide access to RVSS tower sites from approach roads (see Table 2-3). The access roads provide a 12-foot-wide driving surface with 2-foot shoulders on each side, for a total width of 16 feet. Access roads would be constructed by mechanically removing vegetation and grading native soils. CBP and/or CBP contractors would assess the need for road surfacing (including aggregate) and drainage structures for each proposed tower site and associated roads to prevent unacceptable impacts on roads, drainages and adjacent areas. Drainage structures may include, but are not limited to, ditches, culverts and low-water crossings. Road surfacing and drainage structures would be implemented as needed. Construction of access roads results in approximately 0.21 acre of permanent impacts and approximately 0.02 acre of temporary impact. Following construction activities, temporary impact areas would be restored.

Road Improvements

Fourteen approach roads to proposed RVSS tower sites require a total of approximately 19.2 miles of improvements (see Table 2-3). Road improvements include reconstruction, widening and straightening of existing roads and installation of drainage structures. Some roads, such as TCA-DGL-0565, require cut and fill activities. Blasting is required at TCA-DGL-0565. All improved roads have a maximum driving surface of 12 feet and include a 2-foot temporary construction easement on each side of road. Improvements to approach roads permanently impact approximately 59.88 acres of existing roads and temporarily impact approximately 23.46 acres adjacent to existing roads.

Road Maintenance

To ensure full-time access to the towers and other tactical infrastructure, road maintenance, such as grading, blading or replacing drainage structures, would be performed as part of CBP's comprehensive maintenance and repair program for all roads associated with CBP tactical infrastructure and OTIA projects. It is anticipated that maintenance activities of approach and access roads may occur up to six times per year, as necessary.

As mentioned before, OTIA decided not to construct TCA-AJO-0523 and TCA-AJO-0553 at this time as a result of overall program assessments. However, they are retained in the project description and subsequent analysis in the event OTIA decides to construct them in the future. Appropriate coordination with affected agencies and supplemental NEPA documentation, as applicable, would be completed if and when OTIA makes that decision.

2.4 ALTERNATIVE 1

Alternative 1 consists of the construction, operation and maintenance of up to 20 RVSS towers: 14 at preferred sites and 6 towers at alternate sites (Table 2-4 and Figures 2-9 through 2-13). A summary description of each of the six alternate tower sites is provided in Table 2-5.

Table 2-4. Alternative 1 RVSS Tower Sites

	RVSS Site	Ajo Station	Douglas Station	Naco Station	Nogales Station	Yuma Station
1.	YUM-YUS-0531					A
2.	YUM-YUS-0533					P
3.	YUM-YUS-0535					P
4.	YUM-YUS-0539					A
5.	YUM-YUS-0549					A
6.	YUM-YUS-0571					P
7.	YUM-YUS-0575					P
8.	YUM-YUS-0577					P
9.	TCA-AJO-0523*	P				
10.	TCA-AJO-0553*	P				
11.	TCA-NGL-0503				A	
12.	TCA-NGL-0507				P	
13.	TCA-NGL-0509				P	
14.	TCA-NGL-0511**				P	
15.	TCA-NGL-0515				A	
16.	TCA-NCO-0525			P		
17.	TCA-NCO-0529			P		
18.	TCA-NCO-0567			P		
19.	TCA-DGL-0557		P			
20.	TCA-DGL-0559		A			

P=Preferred A=Alternate

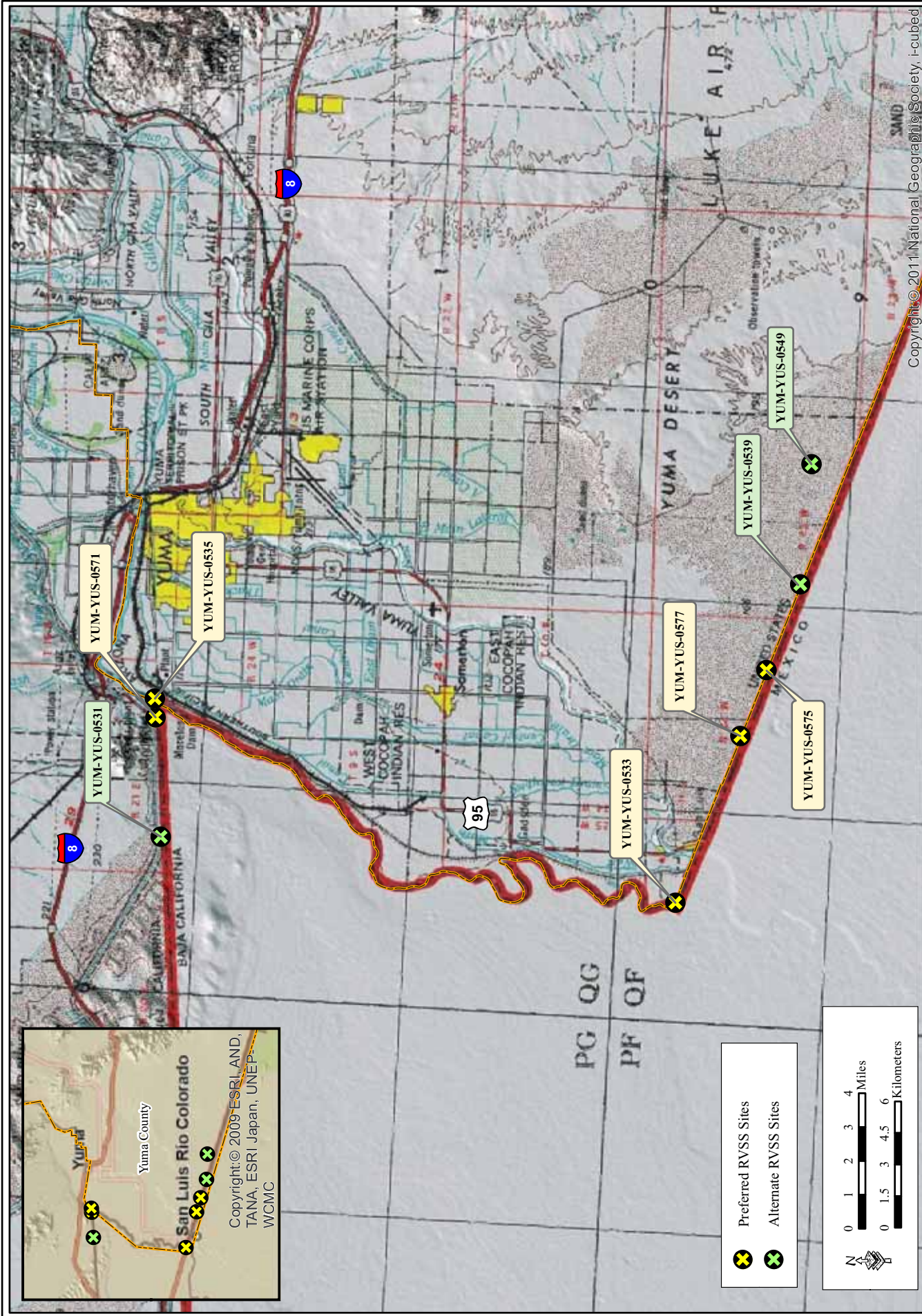
* Will not be constructed at this time due to program assessments.

** TCA-NGL-511 was included as part of the SBInet Tucson West Tower Project EA (CBP 2008).

Alternative 1 includes the construction of one access road (approximately 25 feet) and improvement of 13 approach roads (approximately 19.8 miles). Alternative 1 would result in approximately 67.4 acres of permanent impacts and approximately 38.5 acres of temporary impacts.

2.5 NO ACTION ALTERNATIVE

Under the No Action Alternative, construction of the proposed RVSS towers would not take place and can be characterized as the continuation of current practices and procedures. Surveillance, visual detection and situational awareness would not be enhanced within the area covered by the proposed towers. The operational efficiency and effectiveness of USBP would not be increased in the area covered by the proposed towers under the No Action Alternative. Normal mission operations of the USBP would continue, including patrols, the use of existing surveillance technology and infrastructure maintenance activities. The No Action Alternative serves as a baseline for the comparison of anticipated effects associated with the Proposed Action and Alternative 1, and its inclusion in this EA is required by NEPA regulations (40 C.F.R. 1502.14(d)).



Copyright © 2011 National Geographic Society, i-cubed

Figure 2-9. Alternative 1 RVSS Tower Sites in Yuma Station's AOR

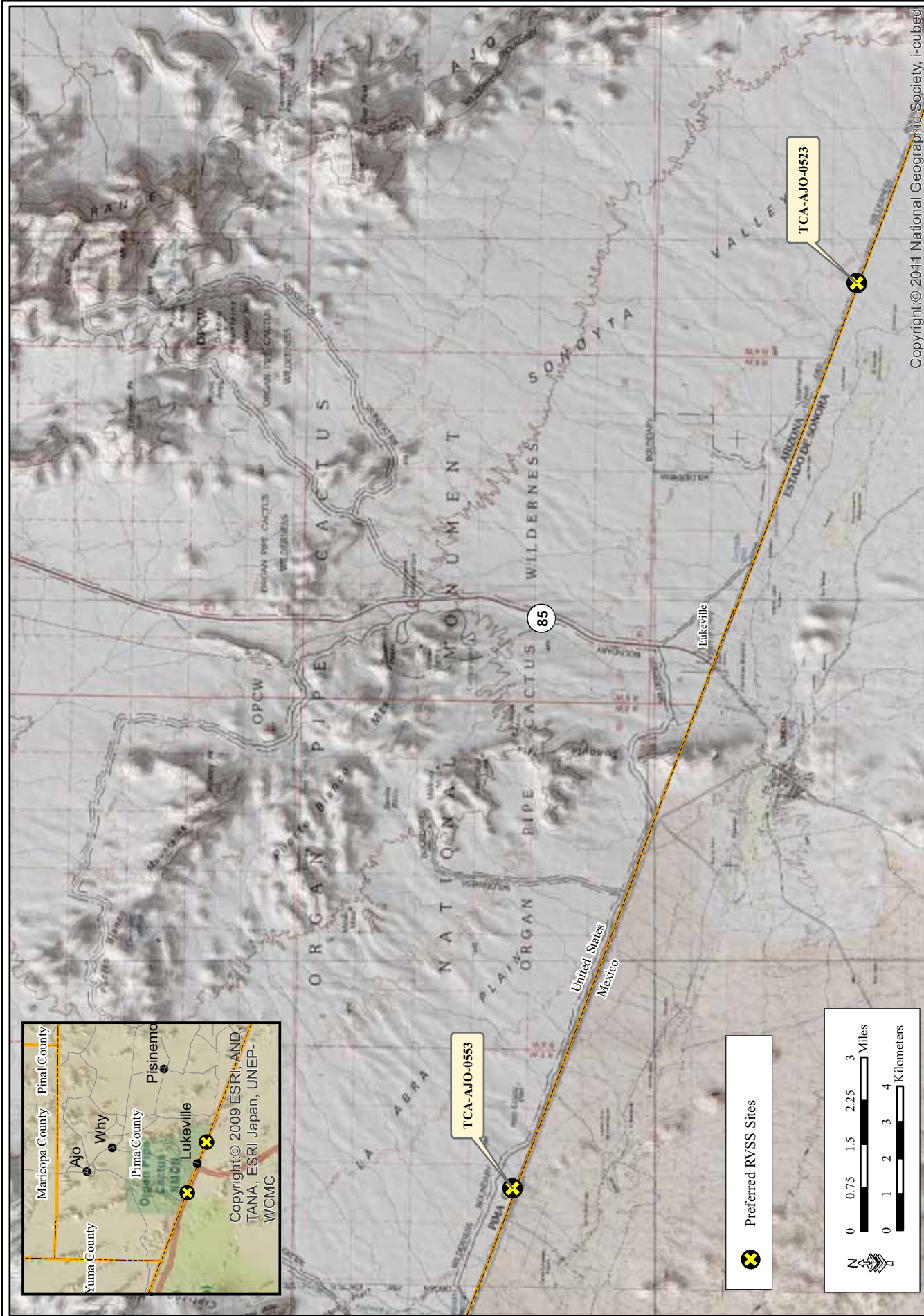
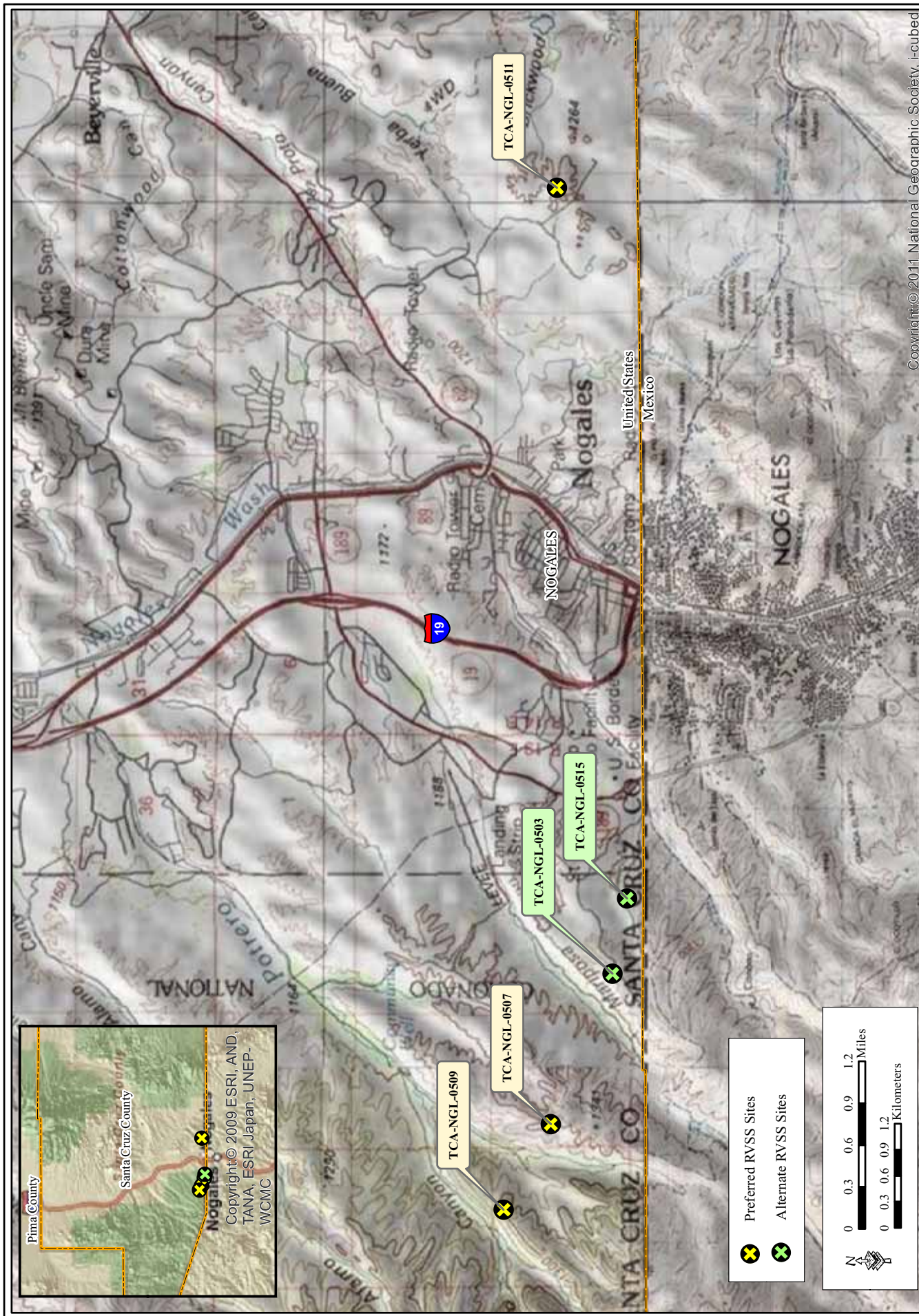


Figure 2-10. Alternative 1 RVSS Tower Sites in Ajo Station's AOR



Copyright © 2011 National Geographic Society, i-cubed



August 2012

Figure 2-11. Alternative 1 RVSS Tower Sites in Nogales Station's AOR

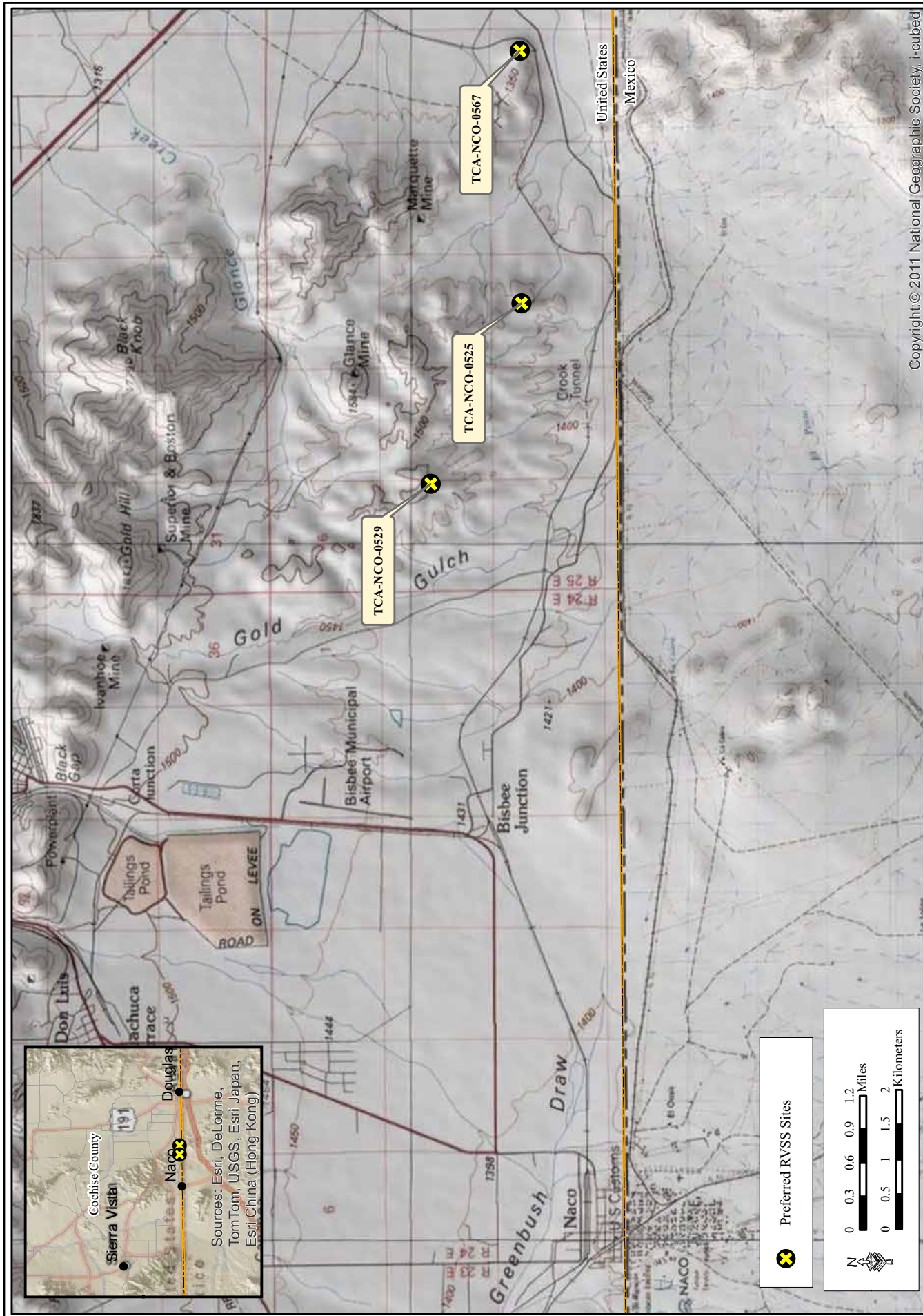


Figure 2-12. Alternative 1 RVSS Tower Sites in Naco Station's AOR

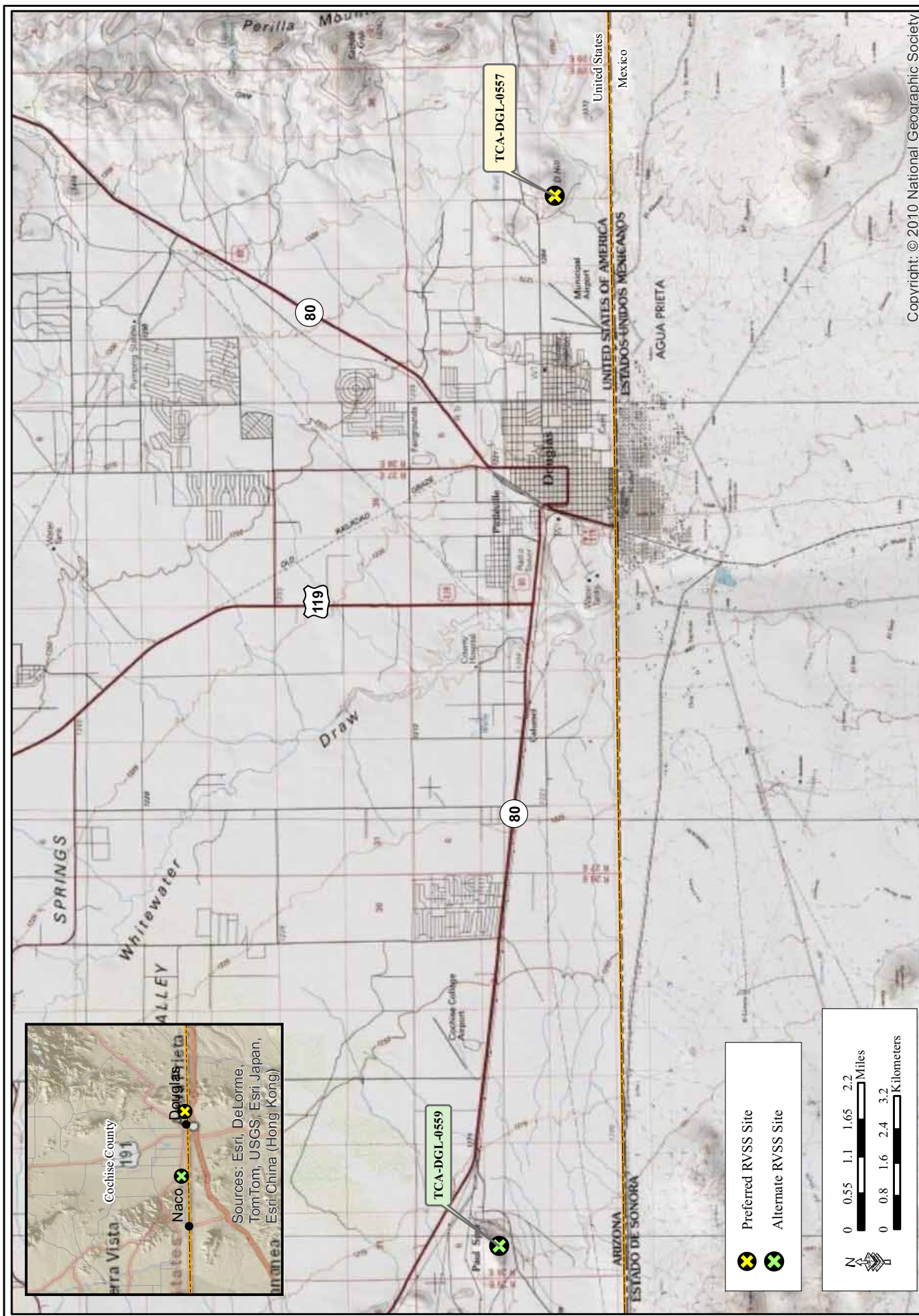


Figure 2-13. Alternative 1 RVSS Tower Sites in Douglas Station's AOR

THIS PAGE LEFT INTENTIONALLY BLANK

Table 2-5. Alternative 1 Tower Site Data and Configuration*

Tower Name	YUM-YUS-0531	YUM-YUS-0539	YUM-YUS-0549	TCA-NGL-0503	TCA-NGL-0515	TCA-DGL-0559
Tower Function	RVSS	RVSS	RVSS	RVSS	RVSS	RVSS
Construction staging/footprint area (temporary)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)	200' x 200' (0.68 acre)
Tower site footprint (permanent)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)	100' x 100' (0.23 acre)
Access road construction and approach road improvements (length/width and surface treatment)	Approach road improvements with a 40-foot (28' x 3,168') construction limit; with 10-foot construction (10' x 3,168') construction limits	None needed	None needed	None needed	None needed	Approach road improvements with a 30-foot (18' x 4,752') and 50-foot (38' x 3,696') construction limits; with 10-foot (10' x 8,448') temporary easement
Impact area associated with road construction, repair and improvement	Approach road improvements (2.04 acres permanent and 0.73 acres temporary)	Not applicable	Not applicable	Not applicable	Not Applicable	Approach road improvements (5.19 acres permanent and 1.9 acres temporary)
Dimension, height and type of security fence for this site	100' x 100' x 8' chain-link w/barbed wire	100' x 100' x 8' chain-link w/barbed wire	100' x 100' x 8' chain-link w/barbed wire	100' x 100' x 8' chain-link w/barbed wire	100' x 100' x 8' chain-link w/barbed wire	100' x 100' x 8' chain-link w/barbed wire
Land manager/ownership	BLM	Reclamation	Reclamation	USFS	USFS	Private
Tower construction type	Monopole	Monopole	Monopole	Monopole	Monopole	Monopole
Tower height	80'	80'	80'	80'	80'	80'
Spotlight	Yes	Yes	Yes	Yes	Yes	No
Laser illuminator	Yes	Yes	Yes	Yes	Yes	Yes
Camera obscuration	Yes	Yes	Yes	Yes	Yes	Yes
Planned Power System(s)	Dual Power System	Grid power/generator	Dual Power System	Dual Power System	Dual Power System	Dual Power System
Generator fuel type, if required	Propane	Propane	Propane	Propane	Propane	Propane
Fuel tank capacity for generator, if required	120 gallons	120 gallons	120 gallons	1,000 gallons	1,000 gallons	1,000 gallons

* The other 14 towers included in Alternative 1 were described in Table 2-3

THIS PAGE LEFT INTENTIONALLY BLANK

2.6 ALTERNATIVES EVALUATED BUT ELIMINATED FROM FURTHER CONSIDERATION

Several project elements that included other technology and infrastructure considerations, such as unmanned aircraft systems and imaging satellites were considered as alternatives, but were eliminated from further review. Although these alternatives or a combination of these alternatives can be valuable tools that CBP may employ in other instances, they were eliminated because of logistical restrictions, environmental considerations and/or functional deficiencies and would fail to meet the purpose and need for this project. These alternatives and reasons for their exclusion from further analysis are discussed below.

2.6.1 Unmanned Aircraft Systems Alternative

As a stand-alone alternative, the use of unmanned aircraft systems in lieu of towers was not further evaluated for feasibility or potential impacts because these systems are not suited for the project area at this time and are not operable in all weather conditions. Airspace over the Barry M. Goldwater Range (BMGR) and Cabeza Prieta National Wildlife Refuge (CPNWR) is restricted within the Tucson and Yuma sectors for military training. This alternative would fail to achieve the goals of the RVSS Upgrade Program (New Towers) or to provide persistent surveillance capability, C2 and sustainment of support capability along the United States/Mexico border within the affected USBP stations' AORs.

2.6.2 Remote Sensing Satellites Alternative

Use of remote sensing satellites was not further evaluated for feasibility or potential impacts because the satellites cannot provide real-time data delivery for the subject border areas, and satellite systems are unreliable in certain weather conditions and do not meet USBP requirements for expedient interdictions of CBVs. Cloud cover and other atmospheric conditions can limit the remote sensing satellites' views of the earth and would not provide full-time coverage or acceptable visual resolution of the border areas under consideration for this project. Therefore, a remote sensing satellite system would fail to meet this project's purpose and need for enhanced surveillance.

2.6.3 Unattended Ground Sensors Alternative

Another alternative that was considered but eliminated from further evaluation involved remote sensor fields only. The expanse of area required for unattended ground sensor fields to effectively cover an area similar to that of a single tower surveillance system would have been too widespread. The number of unattended ground sensors needed would generate an unacceptably large number of used batteries over the life cycles of the sensors and require an extensive amount of man-hours to place, remove, replace and maintain unattended ground sensors in accordance with current sensor life-cycle schedules and use strategies.

2.6.4 Increased CBP Workforce Alternative

Another alternative considered during the preparation of this EA was to have no new RVSS towers and instead to simply increase the number of USBP agents patrolling (via vehicles) the targeted border areas. The targeted areas experience a high level of illegal entries. Due to local topography, elevations and vegetative cover, individually located agents at discrete border locations in the affected USBP stations' AORs would not achieve the same level of detection

capabilities as provided by the Proposed Action. Consequently, additional observation points would have to be established to provide the same coverage as the proposed tower systems, which would disturb additional areas along the border. Such efforts would require an unacceptably large deployment of agents in the field at all times and would require a significant increase in agents to obtain a level of effective border surveillance coverage to match a single tower's persistent surveillance capabilities. Funding and staffing requirements could affect the number of agents available to perform monitoring efforts in the future; therefore, this alternative would not provide a long-term or permanent solution to illegal cross-border activities. This alternative would not meet this project's purpose and need and does not provide the same level of enhanced CBV detection as the Proposed Action.

2.6.5 Increased Aerial Reconnaissance/Operations Alternative

Under this alternative, increased aerial reconnaissance would be used for surveillance to support USBP station operations. CBP would use fixed-wing aircraft and helicopters to perform reconnaissance and detection operations and to support ground patrols.

This alternative was eliminated from further consideration because it does not satisfy the purpose and need of the project. The purpose and need call for a more efficient and effective means of assessing all border activities. Aerial reconnaissance/operations cannot be used on a 24-hours-per-day basis and cannot operate under all weather conditions. Aerial reconnaissance/operations have limited detection capabilities in areas such as deep ravines, at nighttime and in dense vegetation.

Aerial reconnaissance/operations are also limited over or near military installations, National parks and monuments, wilderness areas and near commercial airports. The FAA and the Department of Defense impose flight restrictions on CBP operations missions over or near their facilities. Aerial reconnaissance/operations also have restricted flight patterns near endangered species and other sensitive wildlife habitats, at nighttime and over sacred cultural sites.

In certain remote regions of the southern border, aerial reconnaissance/operations can be an effective border enforcement tool. For example, aerial operations have proven highly effective in areas where the open terrain, low-growing vegetation and sandy soils allow CBVs and signs of other illegal border traffic to be easily recognized from aircraft. Aerial reconnaissance/operations have become invaluable to USBP agents when performing search and rescue missions and during vehicle pursuits. Due to their effectiveness in certain situations and specific areas of the border, increasing aerial reconnaissance/operations may be an effective solution in other areas or to meet the purpose and need of other DHS activities. However, aerial reconnaissance as a stand-alone alternative does not satisfy this project's purpose and need, and thus, for this assessment, it was eliminated from further consideration.

2.7 ALTERNATIVES SUMMARY

The three alternatives selected for further analysis are the Proposed Action, Alternative 1 and the No Action Alternative. The Proposed Action is CBP's preferred alternative for the proposed project. It fully meets the purpose and need of the project, and the preferred towers selected offer the best combination of towers based on the four criteria (accessibility, operability,

constructability and environmental constraints) used to assess tower site suitability. The alternate towers presented in Alternative 1 have associated constraints from an accessibility, operability or constructability perspective (Table 2-6) but could still be constructed. An evaluation of how the Proposed Action and Alternative 1 meet the project's purpose and need is provided in Table 2-7. The potential impacts associated with each alternative are summarized in Table 2-8.

Table 2-6. Alternate Tower Site Constraint Summary

Tower Site	Site Selection Constraint	Rationale
YUM-YUS-0531	Constructability	Limitations associated with foundation and grounding construction.
YUM-YUS-0539	Operability	Site is located too close to border fence.
YUM-YUS-0549	Operability	Site selected as an alternate by USBP.
TCA-AJO-0551	Operability and Constructability	Site located close to the border and major cut and fill activities are required.
TCA-NGL-0503	Accessibility and Constructability	Major cut and fill and drainage structures are required on approach road.
TCA-NGL-0515	Operability	Site selected as an alternate by USBP.
TCA-DGL-0559	Operability	Restricted viewshed and operational coverage.

Table 2-7. Purpose and Need for Alternatives

Purpose and Need	Proposed Action	Alternative 1	No Action Alternative
Provide visual detection for the apprehension of CBVs across the United States/Mexico border	Yes	Yes	No
Offer improved performance (surveillance) of the United States/Mexico border	Yes	Partially	No
Address obsolescence issues	Yes	Yes	No
Enhance situational awareness	Yes	Partially	No
Reduce life-cycle costs	Yes	Yes	No
Improve/enhance RVSS survivability (i.e., paintball attacks, rocking or shooting)	Yes	Yes	No

THIS PAGE LEFT INTENTIONALLY BLANK

Table 2-8. Summary Matrix of Potential Impacts

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Land Use	Construction of the proposed towers and access roads and repairs and improvements to associated approach roads would have direct permanent impacts on approximately 64.5 acres of land across southern Arizona and extreme southeastern California. However, when considering the large area of land within the project area, direct permanent impacts on approximately 64.5 acres as a result of the Proposed Action would be minor.	Approximately 67.4 acres would be permanently impacted under Alternative 1.	No direct impacts would occur.
Soils	Construction of the proposed towers and access roads and repairs and improvements to associated approach roads would have a direct permanent impact on approximately 64.5 acres and temporarily impact approximately 37.1 acres of soils. The disturbance to approximately 64.5 acres of soils spread across southern Arizona and extreme southeastern California would be minor when examined on a regional scale. The Proposed Action would not affect any Prime Farmlands; however approximately 8 acres of Rositas sands, considered a farmland of unique importance by the state of Arizona, would be permanently impacted.	Approximately 67.4 acres of soils, including approximately 0.46 acre of Rositas sands, would be permanently impacted under Alternative 1.	No direct impacts would occur.
Water Resources	Surface water quality could be temporarily affected by the proposed construction activities; however, these impacts would be negligible through the implementation of BMPs to control stormwater runoff during construction. Hydrology and hydraulics in the region may experience minor impacts due to construction of new and improved roads. Potential effects include the capture of surface or drainage flows and accelerated erosion. No potential jurisdictional wetlands were observed at the proposed tower sites or within the footprint of new and improved roads. A total of 0.79 acre of waters of the United States could be impacted as a result of proposed improvements to 8 existing approach roads. The impacts on groundwater resources would be short-term and minor, but less than significant. Impacts on floodplains would be negligible.	The impacts on surface water quality would be similar to those described in the Proposed Action, but the overall impact would slightly greater than the Proposed Action because the amount of new and improved roads would be greater by 0.6 mile. A total of 0.77 acre of waters of the United States could be impacted as a result of proposed improvements to 7 existing approach roads.	No direct impacts would occur.
Vegetative Habitat	The Proposed Action would have a permanent impact on approximately 64.5 acres of vegetative habitat and temporarily disturb approximately 37.1 acres of vegetative habitat. The plant communities associated with the tower sites are locally and regionally common, and the permanent loss of approximately 64.5 acres of vegetation would not adversely affect the population viability of any plant species in the region. The Proposed Action would have a long-term, minor impact on vegetation.	Under Alternative 1, approximately 67.4 acres of vegetative habitat would be permanently impacted and approximately 38.5 acres of vegetative habitat would be temporarily impacted. Alternative 1 would have a long-term, minor impact on vegetation.	No direct impacts would occur.
Wildlife Resources	<p>The permanent loss of up to 64.5 acres and temporary degradation of approximately 37.1 acres of vegetation communities, along with impacts from the construction or improvement of 19.2 miles of access and approach roads, would have a minor impact on wildlife. There is also a possibility that the proposed RVSS towers could pose hazards to migratory birds; however, since the monopole tower type does not use guy wires, the potential for adverse impacts is greatly reduced.</p> <p>Noise levels associated with tower and road construction and road improvements would result in minimal and temporary impacts on wildlife. The use of spotlights at 12 proposed RVSS towers would also disturb wildlife adjacent to proposed towers. However, on average, the spotlights would only be used twice a night for a period of approximately 5 minutes for each use. Adverse effects from lighting on wildlife species would be permanent and minor.</p>	The impacts on wildlife resources would be greater in acres of habitat loss (67.4 acres) but similar in intensity to those described in the Proposed Action.	No direct impacts would occur.
Protected Species and Critical Habitats	The Proposed Action would have a minor impact on protected species and Critical Habitat. It may affect, but is not likely to adversely affect, 6 Federally protected species. The Proposed Action would not adversely modify proposed Critical Habitat for the southwestern willow flycatcher (<i>Empidonax traillii extimus</i>), would not affect designated critical habitat for the southwestern flycatcher or Chiricahua leopard frog (<i>Lithobates chiricahuensis</i>) or adversely affect designated Critical Habitat for Mexican spotted owl (<i>Strix occidentalis lucida</i>). The Proposed Action would not affect 1 Federal candidate species and would have minor impacts on 1 special status species. CBP has determined the Proposed Action may affect, but is not likely to adversely affect the Sonoran pronghorn. Concurrence from U.S. Fish and Wildlife Service has not been received for this species. At CBP’s discretion, consultation was not completed on the Sonoran pronghorn.	Under Alternative 1, impacts would be similar to those described for the Proposed Action.	No direct impacts would occur.
Cultural Resources	Section 106 consultation with the Arizona SHPO is ongoing for this project. Based on the archaeological survey, archival research results and Native American Tribal consultation to date, CBP has determined that there would be no effects on any National Register of Historic Place (NRHP) eligible architectural or aboveground resources, NRHP-eligible archaeological resources, Traditional Cultural Property or sacred sites.	Under Alternative 1, impacts would be similar to those described for the Proposed Action.	No direct impacts would occur.

Table 2-8, continued

Affected Environment	Proposed Action	Alternative 1	No Action Alternative
Air Quality	Temporary and minor increases in air pollution would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of RVSS towers and access roads. Implementation of the Proposed Action would not violate of air quality standards or conflict with state implementation plans; therefore, the Proposed Action would have a negligible impact on air quality.	The impacts on air quality would be slightly greater than those described in the Proposed Action.	No direct impacts would occur.
Noise	Impacts associated with noise level increases during construction would have a temporary, moderate impact on the environment. Long-term noise levels would decrease at TCA-AJO-0523 and TCA-AJO-0553 on the Organ Pipe Cactus National Monument where solar-powered RVSS would replace existing mobile units, and long-term impacts would be minor for the remaining 18 RVSS towers.	Noise emissions associated with construction and operational activities would be similar to those described in the Proposed Action.	Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed tower sites and associated access roads would not experience construction and tower operational noise events. Noise emissions associated with CBV off-road travel and consequent law enforcement actions would be long-term and minor, and would continue under the No Action Alternative.
Utilities and Infrastructure	The Proposed Action would have a long-term, negligible impact on utilities and infrastructure. Spotlights would be used at 12 proposed RVSS towers. However, on average, the spotlights would only be used twice a night for a period of approximately 5 minutes for each use. Negligible to minor long-term adverse impacts on the night sky and ambient lighting would occur as a result of the implementation of the Proposed Action.	Impacts would be similar to those described for the Proposed Action.	No direct impacts would occur.
Radio Frequency Environment	The RF environment created by the installation, operation and maintenance of the communication systems on the proposed new towers would have a long-term, negligible adverse impact on observatories, human safety or the natural environment. Exposure limits to humans and wildlife would be minimal as a result of the type of equipment used and the elevated position of the equipment on the towers.	Impacts would be the same as those described for the Proposed Action.	No direct impacts would occur.
Roadways and Traffic	With the implementation of the Proposed Action, construction and staging for the towers and access roads would have a temporary, short-term, minor impact on roadways and traffic within the project region. The increase of vehicular traffic would occur during the delivery of supply materials and work crews during the construction. Once construction work is completed, maintenance visits to each site would be required. Currently, it is anticipated that one maintenance trip per month would be required at each of the proposed RVSS towers. These visits would have a long-term, negligible effect on traffic. Existing roads would mainly be utilized to access the tower sites and they would be maintained. Because the public already has access to the existing roads, the improvement of an additional 19.2 miles of roads would have a long-term, minor effect on public’s access.	Permanent and temporary impacts would be similar to those described under the Proposed Action.	No direct impacts would occur.
Aesthetics and Visual Resources	The Proposed Action would have a long-term, moderate impact on aesthetic qualities within the project region. Most towers would be visible 3 to 5 miles away from the tower. Depending on the location and elevation of a viewer, it is possible that an RVSS tower could be visible from up to 15 miles away. Temporary aesthetic impacts during the construction phase of the project would occur at the RVSS tower sites, and these impacts would include the visual impacts of construction equipment.	Permanent and temporary impacts would be similar to those described under the Proposed Action.	Impacts from the creation of illegal roads and trails and deposition of trash by CBVs would continue. The No Action Alternative would have a long-term, minor impact on aesthetics and visual resources.
Hazardous Material	The Proposed Action would not result in the exposures of the environment or public to any hazardous materials. The potential exists for minor releases of petroleum, oil and lubricant during construction, maintenance or operational activities. BMPs would be implemented to minimize any potential contamination at the RVSS sites.	Impacts would be the same as those described for the Proposed Action.	No direct impacts would occur.
Socioeconomics	The Proposed Action would have no adverse effects on socioeconomic conditions in the region, as the proposed towers are not located in highly populated areas. The purchase of materials and use of local labor during the construction of the proposed RVSS towers would provide a temporary benefit for the local economy in the region.	Impacts would be the same as those described for the Proposed Action.	No direct impacts would occur.
Environmental Justice and Protection of Children	Under the Proposed Action, there would be no disproportionate impacts on people, including children, regardless of race or income levels.	Impacts would be the same as those described for the Proposed Action.	No direct impacts would occur.

SECTION 3.0
AFFECTED ENVIRONMENT AND CONSEQUENCES



3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 ASSESSMENT PROCESS

This section of the EA describes the natural and human environment that exists within the region of influence (ROI), and the potential impacts of the Proposed Action, Alternative 1 and the No Action Alternative outlined in Section 2.0 of this document. The ROI for this project includes USBP Yuma, Ajo, Nogales, Naco and Douglas stations' AORs in Arizona and extreme southeastern California. Only those parameters that have the potential to be affected by any of the alternatives are described, as per CEQ guidance (40 C.F.R. 1501.7 [3]).

Some topics are limited in scope due to the lack of direct effect from the proposed project on the resource, or because that particular resource is not located within the project corridor (Table 3-1).

Table 3-1. Resources Analyzed in the Environmental Impact Analysis Process

Resource	Potentially Affected by Implementation of Proposed Action	Analyzed in This EA	Rationale for Elimination
Wild and Scenic Rivers	No	No	No rivers designated as Wild and Scenic Rivers (16 U.S.C. 551, 1278[c], 1281[d]) are located within or near the ROI.
Land Use	Yes	Yes	Not Applicable
Geology	No	No	No geologic resources would be affected.
Soils	Yes	Yes	Not Applicable
Water Resources	Yes	Yes	Not Applicable
Vegetative Habitat	Yes	Yes	Not Applicable
Wildlife Resources	Yes	Yes	Not Applicable
Protected Species and Critical Habitat	Yes	Yes	Not Applicable
Cultural, Historical and Archaeological Resources	Yes	Yes	Not Applicable
Air Quality	Yes	Yes	Not Applicable
Noise	Yes	Yes	Not Applicable
Utilities and Infrastructure	Yes	Yes	Not Applicable
Radio Frequency Environment	Yes	Yes	Not Applicable
Roadways and Traffic	Yes	Yes	Not Applicable
Aesthetic and Visual Resources	Yes	Yes	Not Applicable
Hazardous Materials	Yes	Yes	Not Applicable
Socioeconomics	Yes	Yes	Not Applicable
Environmental Justice and Protection of Children	Yes	Yes	Not Applicable

Impacts (consequence or effect) can be either beneficial or adverse, and can be either directly related to the action or indirectly caused by the action. Direct impacts are those effects that are caused by the action and occur at the same time and place (40 C.F.R. 1508.8[a]). Indirect impacts are those effects that are caused by the action and are later in time or further removed in

distance, but that are still reasonably foreseeable (40 C.F.R. 1508.8[b]). As discussed in this section, the alternatives may create temporary (lasting the duration of the project), short-term (up to 3 years), long-term (3 to 10 years following construction) or permanent effects.

Whether an impact is significant depends on the context in which the impact occurs and the intensity of the impact. Impacts on each resource can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis, the intensity of impacts will be classified as negligible, minor, moderate or major. The intensity thresholds are defined as follows:

- **Negligible:** A resource would not be affected or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequences.
- **Minor:** Effects on a resource would be detectable, although the effects would be localized, small and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- **Moderate:** Effects on a resource would be readily detectable, long-term, localized and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- **Major:** Effects on a resource would be obvious, long-term, and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

The following discussions describe and, where possible, quantify the potential effects of each alternative on the resources within or near the ROI. All impacts described below are considered to be adverse unless stated otherwise. Table 3-2 presents the permanent and temporary (construction) impacts for the construction of the proposed RVSS towers and new access roads, approach road improvements and road maintenance.

Table 3-2. Temporary and Permanent Impacts Resulting from the Proposed and Alternative Towers

Tower Site/Action	Permanent Impact (acres)		Temporary Impact (acres)	
	Site	Roads	Site	Roads
YUM-YUS-0533	0.23	0	0.68	0
YUM-YUS-0535	0.23	0.22	0.68	0.12
YUM-YUS-0543	0.23	0	0.68	0
YUM-YUS-0547	0.23	0	0.68	0
YUM-YUS-0571	0.23	0.02	0.68	0.01
YUM-YUS-0573	0.23	1.14	0.68	0.17
YUM-YUS-0575	0.23	3.53	0.68	2.0
YUM-YUS-0577	0.23	3.44	0.68	2.0
TCA-AJO-0523	0.23	4.84	0.68	2.61
TCA-AJO-0553	0.23	9.32	0.68	4.7

Table 3-2, continued

Tower Site/Action	Permanent Impact (acres)		Temporary Impact (acres)	
	Site	Roads	Site	Roads
TCA-NGL-0505	0.23	0	0.68	0
TCA-NGL-0507	0.23	4.88	0.68	1.8
TCA-NGL-0509	0.23	0	0.68	0
TCA-NGL-0511	0.23	3.85	0.68	0.80
TCA-NGL-0555	0.23	0	0.68	0
TCA-NCO-0525	0.23	10.08	0.68	3.5
TCA-NCO-0529	0.23	9.6	0.68	2.9
TCA-NCO-0567	0.23	3.3	0.68	1.2
TCA-DGL-0557	0.23	2.53	0.68	0.66
TCA-DGL-0565	0.23	3.13	0.68	1.0
TOTAL PROPOSED ACTION	4.6	59.88	13.6	23.46
Alternate Towers				
YUM-YUS-0531	0.23	2.04	0.68	0.73
YUM-YUS-0539	0.23	0	0.68	0
YUM-YUS-0549	0.23	0	0.68	0
TCA-NGL-0503	0.23	0	0.68	0
TCA-NGL-0515	0.23	0	0.68	0
TCA-DGL-0559	0.23	5.19	0.68	1.9
TOTAL ALTERNATIVE 1	4.6	62.84	13.6	24.9

3.2 LAND USE

3.2.1 Affected Environment

The proposed tower sites in the Yuma AOR are located on BLM, Reclamation and Quechan tribal lands in Yuma County, Arizona, and Imperial County, California (Table 3-3). Yuma County covers approximately 5,522 square miles of the southwest corner of Arizona (Arizona Department of Commerce [AZDC] 2002). Mostly, desert land use is dependent upon soil characteristics and water availability. Agriculture, tourism, military and government are the county's principal land uses. BLM accounts for 14.8 percent of land ownership; Indian reservations, 0.2 percent; the State of Arizona, 7.7 percent; private or corporate, 10.5 percent; and other public lands, 66.8 percent (AZDC 2002). Agriculture employs 35 percent of the labor force in Yuma County (AZDC 2002). Imperial County, California, is a predominantly rural area with roughly 80 percent of lands being undeveloped, lake, dune, desert or mountains, and 20 percent of lands being used for irrigation agriculture or livestock production (Imperial County 1993). Incorporated cities, unincorporated communities and support facilities account for less than 1 percent of land use.

Table 3-3. Proposed Tower Site Land Ownership

Tower Site	County	Alternative	Land Manager/Owner
YUM-YUS-0533	Yuma	Proposed Action	Reclamation
YUM-YUS-0535	Yuma	Proposed Action	Reclamation
YUM-YUS-0543	Yuma	Proposed Action	Reclamation
YUM-YUS-0547	Yuma	Proposed Action	Reclamation
YUM-YUS-0571	Imperial	Proposed Action	Quechan Tribe
YUM-YUS-0573	Imperial	Proposed Action	Reclamation
YUM-YUS-0575	Yuma	Proposed Action	CBP
YUM-YUS-0577	Yuma	Proposed Action	CBP
YUM-YUS-0531	Yuma	Alternative 1	Reclamation
YUM-YUS-0539	Yuma	Alternative 1	Reclamation
YUM-YUS-0549	Yuma	Alternative 1	Reclamation
TCA-AJO-0523	Pima	Proposed Action	NPS
TCA-AJO-0553	Pima	Proposed Action	NPS
TCA-NGL-0505	Santa Cruz	Proposed Action	USFS
TCA-NGL-0507	Santa Cruz	Proposed Action	USFS
TCA-NGL-0509	Santa Cruz	Proposed Action	USFS
TCA-NGL-0511	Santa Cruz	Proposed Action	Private
TCA-NGL-0555	Santa Cruz	Proposed Action	USFS
TCA-NGL-0503	Santa Cruz	Alternative 1	USFS
TCA-NGL-0515	Santa Cruz	Alternative 1	USFS
TCA-NCO-0525	Cochise	Proposed Action	ASTL
TCA-NCO-0529	Cochise	Proposed Action	Private
TCA-NCO-0567	Cochise	Proposed Action	Private
TCA-DGL-0557	Cochise	Proposed Action	Private
TCA-DGL-0565	Cochise	Proposed Action	ASTL
TCA-DGL-0559	Cochise	Alternative 1	Private

The Ajo proposed tower sites are located on NPS (i.e., OPCNM) land in Pima County (see Table 3-3). Pima County is situated on the southwestern border of Arizona and encompasses 9,184 square miles (AZDC 2008). Land use is dependent upon soil characteristics and water availability since the majority of Pima County is desert. Government, tourism, commercial and Indian reservations are the county's principal land uses. BLM and USFS account for 12.1 percent of land ownership; Indian reservations, 42.1 percent; the State of Arizona, 14.9 percent; private or corporate, 13.8 percent; and other public lands, 17.1 percent (AZDC 2008). Other public lands include those managed by USFWS and NPS.

The Nogales proposed tower sites in Santa Cruz County are located on USFS land within the Coronado National Forest (CNF) and private lands (see Table 3-3). Santa Cruz County is located in southeastern Arizona adjacent to the United States/Mexico border and is the smallest county in Arizona (Santa Cruz 2004). The county encompasses 1,238.11 square miles, of which 1,237.63 square miles is land and only 0.47 square mile is water (Santa Cruz County 2004). The

county includes substantial amounts of public land. The northwest part of the Santa Cruz County has a rich historic, cultural and ranching heritage, and ranches are prevalent in this portion of the county still today. The southeast part of Santa Cruz County has a rich and sustained agricultural heritage, and the majority of lands in this part of the county remain in agricultural use today (Santa Cruz County 2004). The USFS and BLM manage approximately 54 percent of the land in Santa Cruz County (Santa Cruz County 2004).

The Naco and Douglas proposed tower sites are located on ASTL and private lands in Cochise County (see Table 3-3). Cochise County is situated in the southeastern corner of Arizona and encompasses 6,218.77 square miles (U.S. Census Bureau [USCB] 2000). Mexico lies to the south of the county, and the State of New Mexico forms the county's eastern border. Approximately 56 percent of Cochise County falls within the jurisdiction of some level of government (e.g., USFS, BLM, ASTL). Approximately 40 percent (1.6 million acres) of the county is privately owned and represents one of the largest contiguous spans of privately owned land in the state (Esparza and Carruthers 2000). Rural culture and a lifestyle largely influenced by traditional land uses such as livestock production, farming and mining are prevalent in Cochise County. Preservation of open space is a particularly important land use issue among planners and property owners in Cochise County, and a high priority is placed on the preservation of open space for the purpose of protecting and sustaining traditional farming and ranching land uses (Cochise County 2002).

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

Construction of the proposed towers and access roads and repairs and improvements to associated approach roads would have direct permanent impacts on approximately 64.5 acres of land across southern Arizona and extreme southeastern California. The Proposed Action would convert a variety of Federal, state, tribal and private lands (see Table 3-3) to a developed land use at the 20 new tower sites, including tower footprints and roads. However, when considering the large area of land within the project region, direct permanent impacts on approximately 64.5 acres as a result of the Proposed Action would be minor.

3.2.2.2 Alternative 1

Under Alternative 1, impacts on land use would be similar to those described for the Proposed Action; however, permanent impacts on 67.4 acres would occur.

3.2.2.3 No Action Alternative

Under the No Action Alternative, no proposed RVSS tower or access road construction would occur. The land use of the project area would remain unaffected.

3.3 SOILS

3.3.1 Affected Environment

There are 10 soil complexes associated with the proposed RVSS tower sites (NRCS 2003; NRCS 2012). A description of each soil type is presented in Table 3-4, and soil maps depicting the proposed tower locations are provided in Appendix C. Three of the Yuma tower locations are within a portion of the Colorado Desert where soil mapping is incomplete, and there is currently no soil data available (Table 3-4). Erosion hazards for each soil complex estimate the potential

Table 3-4. Characteristics of Soils at the Proposed RVSS Tower Sites

Soils	County	Tower Site	Slope (percent)	Permeability	Runoff Rate	Erosion Hazard Wind/Water for Undisturbed Soils	Limitations for Development	Prime Farmlands
Mapping not complete (no soil data available)	Yuma	YUM-YUS-0531 YUM-YUS-0571 YUM-YUS-0573	N/A	N/A	N/A	N/A	N/A	N/A
Holtville clay	Yuma	YUM-YUS-0533	nearly level	slow to moderate	rapid	slight	high clay content, shrink-swell potential and low strength	Prime Farmland if irrigated and reclaimed of excess salts and sodium
Indio-Lagunita-Ripley complex	Yuma	YUM-YUS-0535	nearly level to gently sloping	moderate to rapid	slow to medium	slight	hazard of flooding, blowing sand and dust	No
Rositas sands	Yuma	YUM-YUS-0539 YUM-YUS-0543 YUM-YUS-0547 YUM-YUS-0549 YUM-YUS-0575 YUM-YUS-0577	nearly level to rolling	rapid	slow	high	slope and seepage	Farmland of unique importance
Lomitas extremely stony loam	Pima	TCA-AJO-0553	8-40	moderate	medium to rapid	slight	none	No
Gunsight very gravelly loam	Pima	TCA-AJO-0523	2-15	moderate	medium	slight to moderate	none	No
Caralampi gravelly sandy loam, eroded	Santa Cruz	TCA-NGL-0503 TCA-NGL-0505 TCA-NGL-0507 TCA-NGL-0509	10-60	moderately slow	rapid	high	none	No
Caralampi gravelly sandy loam	Santa Cruz	TCA-NGL-0505 TCA-NGL-0555 TCA-NGL-0515	10-40	moderately slow	medium	high	none	No

Table 3-4, continued

Soils	County	Tower Site	Slope (percent)	Permeability	Runoff Rate	Erosion Hazard Wind/Water for Undisturbed Soils	Limitations for Development	Prime Farmlands
Deloro-Leyte-Lampshire complex	Cochise	TCA-NCO-0525 TCA-NCO-0529	3-55	slow	medium to very high	slight by wind/slight to severe by water	limited depth to bedrock interferes with excavation, slight to severe hazard of water erosion, and on sites for roads; special design is needed to overcome the slope	No
Brunkow-Chiricahua-Andrada complex	Cochise	TCA-NCO-0567	3-20	moderately slow	low to very high	slight by wind/slight to moderate by water	limited depth to bedrock interferes with excavation and slight to moderate hazard of water erosion	No
Mabray-Chiricahua-rock outcrop complex	Cochise	TCA-DGL-0565 TCA-DGL-0557 TCA-DGL-0559	3-45	slow	low to very high	very slight by wind/severe by water	high concentrations of calcium carbonate, steep slopes and depth to bedrock interferes with excavation	No

Sources: NRCS 1972, NRCS 1979, NRCS 1980, NRCS 2003a, NRCS 2003b, NRCS 2010 and NRCS 2012

for soil loss or erosion due to water or wind (see Table 3-4). These hazards are based on undisturbed soils. To prevent soil loss, especially at those tower locations with high erosion hazards, BMPs would be implemented during construction activities to avoid major soil loss, as part of the SWPPP.

Prime Farmland

Prime Farmland is protected under the Farmland Protection Policy Act (FPPA) of 1980 and 1995. The FPPA's purpose is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. As required by Section 1541(b) of the FPPA, 7 U.S.C. 4202(b), Federal agencies are (a) to use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland; (b) to consider alternative actions, as appropriate, that could lessen adverse effects; and (c) to ensure that their programs, to the extent practicable, are compatible with state and local governments and private programs and policies to protect farmland.

NRCS (2010 and 2012) reported 1 of the 10 soil types as potential Prime Farmland. Holtville clay is considered Prime Farmland, but only if it is irrigated and reclaimed of excess salts and sodium. Rositas sands are considered farmland of unique importance in Arizona. However, none of the lands at any of the tower sites are currently in agricultural production.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Construction of the proposed towers and access roads and repairs and improvements to associated approach roads would permanently remove approximately 64.5 acres of soils from biological productivity and would also temporarily disturb approximately 37.1 acres of soils. Potential impacts by soil type are presented in Table 3-5. The disturbance to 64.5 acres of soils spread across southern Arizona and extreme southeastern California would be minor when examined on a regional scale. Furthermore, many of these impacts are associated with several linear roads distributed over a large geographic area and many different soil types. Thus, impacts associated with road activities would vary with soil type and would be more difficult to mitigate than a single site. Construction of the towers and new access roads would disturb previously undisturbed soils. Erosion would be expected during and immediately following tower and road construction activities. The potential for erosion would be greatest on Rositas sand, Caralampi gravelly sandy loam, eroded Caralampi gravelly sandy loam, Deloro-Leyte-Lampshire complex and Mabray-Chiricahua-rock outcrop complex soils (Appendix C). These soils have a high/severe erosion potential once they are disturbed.

The Proposed Action would not affect any Prime Farmlands, as none of the soils in their current condition found at the proposed tower sites are considered Prime Farmland soils. Rositas sands are considered farmland of unique importance by the State of Arizona. Construction of YUM-YUS-0543, YUM-YUS-0547 and YUM-YUS-0577 and associated access road construction would have a direct permanent impact on approximately 8 acres of Rositas sands.

Table 3-5. Soil Impacts Resulting from the Proposed Action

Soil Type	Tower Site	Potential Impact (acres)	
		Permanent	Temporary
Unknown	YUM-YUS-0571 and -0573	1.6	1.6
Rositas sands	YUM-YUS-0543, - 0547, -0575 and 0577	7.9	6.7
Glenbar silty clay loam	YUM-YUS-0535	0.16	0.10
Indio-Lagunita-Ripley Complex	YUM-YUS-0535	0.29	0.70
Holtville clay	YUM-YUS-0533	0.23	0.68
Lomitas extremely stony loam, 8 to 40 percent slopes	TCA-AJO-0553	3.6	1.7
Gunsight very gravelly loam, 0 to 2 percent slopes	TCA-AJO-0523	0.26	0.70
Gunsight very gravelly loam, 2 to 15 percent slopes	TCA-AJO-0523 and -0553	3.0	2.4
Harqua-Gunsight complex	TCA-AJO-0523 and -0553	1.8	1.1
Harqua very gravelly loam, 0 to 3 percent slopes	TCA-AJO-0553	0.26	0.25
Torrifluvents	TCA-AJO-0523 and -0553	2.5	1.4
Antho fine sandy loam	TCA-AJO-0523	1.6	0.92
Gilman very fine sandy loam, saline	TCA-AJO-0523	0.42	0.22
Caralampi gravelly sandy loam, 10 to 60 percent slopes	TCA-NGL-0505, -0507 and -0509	4.5	2.9
Caralampi gravelly sandy loam, 10 to 40 percent slopes	TCA-NGL-505 and 0555	0.3	2.7
Lampshire-Graham-Rock outcrop association, steep	TCA-NGL-0511	2.6	1.2
Graham soils, 5 to 20 percent slopes	TCA-NGL-0511	1.4	0.30
Deloro-Leyte-Lampshire complex, 3 to 55 percent slopes	TCA-NCO-0525 and -0529	10	3.9
Nolam-Libby-Buntline complex, 1 to 10 percent slopes	TCA-NCO-0525	2.8	1.2
Riverroad and Ubik soils, 0 to 5 percent slopes	TCA-NCO-0525	0.02	0.02
Sutherland-Mule complex, 3 to 15 percent slopes	TCA-NCO-0525 and TCA-DGL-0557	1.6	0.57
Eloma-Caralampi-Whitehouse complex, 1 to 15 percent slopes	TCA-NCO-0529	3.4	1.2
Riverroad and Ubik soils, 0 to 5 percent slopes	TCA-NCO-0529 and -0567	0.38	0.21
Riverwash-Bodecker complex, 0 to 3 percent slopes	TCA-NCO-0529	0.18	0.06
Mabray-Chiricahua-rock outcrop complex, 3 to 45 percent slopes	TCA-DGL-0557 and -0565	10	2.7
Pits-Dumps complex	TCA-DGL-0565	0.5	0.29
Brunkcow-Chiricahua-Andrada complex, 3 to 20 percent slopes	TCA-NCO-0567	0.75	0.57
Blakeney-Luckyhills complex, 3 to 15 percent slopes	TCA-NCO-0567	0.24	0.06

Table 3-5, continued

Soil Type	Tower Site	Potential Impact (acres)	
		Permanent	Temporary
Libby-Gulch complex, 0 to 10 percent slopes	TCA-NCO-0567	0.07	0.04
Nolam-Libby-Buntline complex, 1 to 10 percent slopes	TCA-NCO-0567	2.1	0.75
TOTAL		64.5	37.1

Following construction activities, any temporary impact areas would be revegetated with a mixture of native plant seeds or nursery plantings (or both). BMPs would be implemented to prevent soil erosion off-site due to wind or rain, and a National Pollutant Discharge Elimination System (NPDES) permit, including a SWPPP, for development would be obtained.

3.3.2.2 *Alternative 1*

Alternative 1 would permanently impact approximately 67.4 acres of soils and temporarily disturb approximately 38.5 acres. None of the soils in their current condition found at the proposed tower sites are considered Prime Farmland soils. Rositas sands are considered farmland of unique importance by the State of Arizona. Construction of YUM-YUS-0539 and YUM-YUS-0549 would have a direct permanent impact on approximately 0.46 acre of Rositas sands. Under Alternative 1, all other permanent and temporary impacts on soils would be similar to those described for the Proposed Action.

3.3.2.3 *No Action Alternative*

Under the No Action Alternative, there would be no modification of soils since the proposed RVSS towers would not be constructed.

3.4 WATER RESOURCES

3.4.1 Affected Environment

3.4.1.1 *Surface Water*

The CWA §303(d)[1][A] requires that each state monitor surface waters and compile a "303(d) List" of impaired streams and lakes. The tower sites and associated roads are located across southern Arizona and extreme southeastern California. Most of the proposed tower sites are located in three ADEQ watersheds: Santa Cruz, Lower Colorado River and the Lower Gila River watersheds. The ADEQ 2010 303(d) report lists two impaired stream reaches near the project areas: the Colorado River mainstream in the Yuma Sector and Nogales Wash in the Nogales Sector (ADEQ 2011). The tower sites in California are located near the All American Canal, which is considered impaired and is on the California 303(d) list (California Water Resources Control Board [CWRCB] 2004). Table 3-6 provides information on the impaired waterbodies near the project area.

Table 3-6. List of Impaired Waterbodies near Project Area

Sub-watershed Name & ADEQ ID	Location	Suspected Causes of Impairment	Suspected Sources of Impairment
Nogales Wash 15050301-011	From United States/Mexico border to Potrero Creek	copper, ammonia, <i>E. coli</i> and chlorine	Abandoned mines in Mexico
Colorado River 15030107-001	From Main Canal to United States/Mexico border	selenium, low dissolved oxygen	Not reported
Colorado River Basin and Imperial Valley Agricultural Drains 72310000	All American Canal	selenium, pathogens, toxaphene, dieldrin, dichlorodiphenyltrichloroethane (DDT)	Agricultural return flows

Source: ADEQ 2011 and CWRCB 2004

3.4.1.2 Hydrology and Hydraulics

Within the project area, surface water drainage originates in the mountainous areas and results in numerous intermittent, braided channels, connecting to larger arroyos or washes that drain into Mexico. These washes are well defined and hold runoff from brief but intense summer rainstorms, or other seasonal rainstorms that are typically less intense and longer in duration. Usually, runoff quickly infiltrates streambeds, and only rarely is it sufficient to cause flooding in the normally dry washes.

3.4.1.3 Wetlands and Waters of the United States

Wetlands are a subset of the waters of the United States that are subject to regulation under Section 404 of the CWA. Other potential waters of the United States in the region include desert playas, as well as intermittent and ephemeral stream channels. Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. No wetlands were observed within the project area.

Activities that result in the dredging or filling of waters of the United States are regulated under Section 404 of the CWA. The USACE established nationwide permits (NWP) to efficiently authorize common activities that do not significantly impact waters of the United States, including wetlands. NWP 14 can be used for activities such as road improvement and construction proposed in this EA. The threshold for an NWP 14 is a disturbance equal to or less than 0.5 acre of non-tidal waters or not greater than 0.33 acre in tidal waters. Gulf South Research Corporation (GSRC) surveyed the proposed project area to identify potential waters of the United States and concluded that there are no waters of the United States at or near any of the tower sites. However, there are numerous crossings of waters of the United States along approach roads.

3.4.1.4 Groundwater

The proposed tower sites and access roads are located in several ADWR groundwater basins including the Douglas, Santa Cruz, Western Mexican and Yuma basins (ADWR 2006). The three tower sites in California are located in the Imperial Valley hydrologic region within the Colorado River groundwater basin (California Department of Water Resources [CDWR] 2009).

Table 3-7 presents the amount of groundwater use and recharge rate in the basins located in the project regions. The Douglas, Yuma and Colorado River basins are currently experiencing groundwater recharge deficits (ADWR 2006, ADWR 2009 and CDWR 2009).

Table 3-7. Groundwater Basins Use and Recharge Rate

Groundwater Basin	Recharge Rate (acre-feet per year)	Natural Outflows & Municipal, Industrial & Agriculture Water Use (acre-feet per year)
Douglas	22,000	52,800
Santa Cruz	43,000	21,501
Western Mexican	1,000	300
Yuma	213,000	263,000
Colorado River Basin	10,145,000	10,193,000

Source: ADWR 2006, ADWR 2009 and CDWR 2009

Sole Source Aquifers

The EPA's Sole Source Aquifer (SSA) Program was established under Section 1424(e) of the Safe Drinking Water Act. Since 1977, it has been used by communities to help prevent contamination of groundwater from Federally funded projects. It is a tool to protect drinking water supplies in areas with few or no alternative sources to the groundwater resource and where, if contamination occurred, using an alternative source would be extremely expensive. It has also increased public awareness of the vulnerability of groundwater resources. The SSA Program allows for EPA review of any project that is financially assisted by Federal grants or Federal loan guarantees. These projects are evaluated to determine whether they have the potential to contaminate a sole source aquifer.

Two sole source aquifers are located within the project region, the Upper Santa Cruz and Ava Basin Sole Source Aquifer and the Naco-Bisbee Sole Source Aquifer (EPA 2012a and 2012b). The Upper Santa Cruz and Ava Basin Sole Source Aquifer was designated under the authority of Section 1424(e) of the Safe Drinking Water Act (49 FR 2948) in 1984 (EPA 2012a). Preferred tower sites, TCA-NGL-0509, TCA-NGL-0507, TCA-NGL-0505, TCA-NGL-0555 and TCA-NGL-0511, as well as alternate tower sites, TCA-NGL-0503 and TCA-NGL-0515, are located within the Upper Santa Cruz and Ava Basin Sole Source Aquifer.

The Naco-Bisbee Sole Source Aquifer was designated under the authority of Section 1424(e) of the Safe Drinking Water Act (53 FR 38337) in 1988 (EPA 2012b); however, none of the preferred or alternate tower sites are located within this sole source aquifer.

3.4.1.5 Floodplains

A floodplain is the area adjacent to a river, creek, lake, stream or other open waterway that is subject to flooding when there is a major rain event. Floodplains are further defined by the likelihood of a flood event. If an area is in the 100-year floodplain, there is a 1 in 100 chance in any given year that the area will flood. FEMA floodplain maps were reviewed to identify project locations within mapped floodplains (FEMA 2008). Only two proposed tower sites, YUM-YUS-0533 and YUM-YUS-0535, and the associated road for YUM-YUS-0535 are located in the 100-year floodplain adjacent to the Colorado River. Portions of the approach road to TCA-NCO-0529 are located in the 100-year floodplain.

3.4.2 Environmental Consequences

3.4.2.1 *Proposed Action*

Surface water quality could be temporarily affected by the proposed construction activities. However, through the implementation of effective BMPs to control stormwater runoff during construction activities, these impacts would be negligible. Short-term effects could include erosion and sedimentation during rain events at construction sites. Accidental spills of hazardous substances (i.e., anti-freeze, fuels, oils, lubricants) could directly impact water quality during construction activities. The proposed construction activities would require a stormwater permit that incorporates the use of BMPs to reduce pollutants from leaving the construction site during rain events. As part of the NPDES permit process, a General Stormwater Permit is required prior to construction, and this would include a site-specific SWPPP and Notice of Intent (NOI). In addition, to prevent the impact of accidental spills, the contractors would need a site-specific Spill Prevention, Control and Countermeasure Plan (SPCCP) in place prior to the start of construction. BMPs outlined in these plans would reduce potential migration of soils, anti-freeze, fuels, oils, lubricants and construction debris into the local watersheds.

Hydrology and hydraulics in the region may experience minor impacts due to construction of new and improved roads. Potential effects include the capture of surface or drainage flows and accelerated erosion. However, improved roads would be upgraded to prevent incising of the road and culverts. Drainage structures (i.e., concrete low-water crossings) would be installed to prevent or minimize alteration of surface and drainage flows. Culverts and drainage structures would also maintain the current distribution of surface and drainage flows. A SWPPP would be prepared prior to construction and would contain drainage controls at stream crossings to prevent soil erosion.

No potential jurisdictional wetlands were observed at the proposed tower sites or within the footprint of new and improved roads. Waters of the United States cross eight existing approach roads where improvements are proposed. Table 3-8 identifies the type of improvement proposed and the approximate impact on the waters of the United States. A total of 0.79 acre would be impacted by the proposed approach road improvements. Potential impacts on waters of the United States would be negligible. A USACE permit would be required to place fill or operate mechanized equipment in these jurisdictional waters of the United States. All road repairs (i.e., grading), improvements and construction of new road would impact less than 0.5 acre per crossing and would be authorized under an NWP 14. TCA-AJO-0553 (Crossing 1) and TCA-NCO-0567 (Crossing 3) would require a pre-construction notification under NWP 14.

The Proposed Action would have a minor impact on groundwater resources. Several groundwater basins in the region are experiencing groundwater deficits, and the Proposed Action would require groundwater resources for watering new access road surfaces and fugitive dust suppression during construction and road improvement activities. The water used to compact and construct new access roads typically averages 7 acre-feet (2,272,513 gallons) per mile of new road construction (Miranda 2006). Repairs and improvements to existing roads require approximately 1 acre-foot per mile (325,841 gallons). Table 3-9 segregates the road construction projects by groundwater basin and estimates the total water use for construction within each groundwater basin.

Table 3-8. Impacts expected from Proposed Approach Road Improvements in Waters of the United States

Tower Site/ Approach Road (type of improvement)	Crossings Proposed for Improvements (impact in acres)		
	Crossing 1	Crossing 2	Crossing 3
YUM-YUS-0573 (grouted riprap)	0.02		
TCA-AJO-0523 (cement low-water crossing)	0.05	0.04	0.03
TCA-AJO-0553 (cement low-water crossing)	0.12	0.10	-
TCA-NGL-0507 (cement low-water crossing)	0.05	-	-
TCA-NCO-0525 (cement low-water crossing)	0.02	-	-
TCA-NCO-0529 (cement low-water crossing)	0.05	0.04	-
TCA-NCO-0567 (cement low-water crossing)	0.03	0.08	0.12
TCA-DGL-557 (cement low-water crossing)	0.04	-	-

Table 3-9. Road Construction Water Use Segregated by Groundwater Basins

Groundwater Basin	New Road Construction (miles)	Road Improvements (miles)	Water Use (acre-feet)
Douglas	0.01	7.70	7.77
Santa Cruz	0.00	2.11	2.11
Western Mexican	0.01	5.95	6.02
Yuma	0.00	3.33	3.33
Colorado River Basin	0.00	0.11	0.11
Total	0.02	19.20	19.34

Source: Miranda 2006

The water requirements of the Proposed Action are limited to the duration of the construction project and small compared to the overall water use in the basins. However, the Douglas, Yuma and Colorado River basins experience an annual overdraft of groundwater resources and any increase in the demand would increase the deficit. No groundwater would be sourced from the Upper San Pedro watershed near Naco. All water necessary for construction on the Nogales and Naco station towers would be brought in from other watersheds.

Because TCA-NGL-0509, TCA-NGL-0507, TCA-NGL-0505, TCA-NGL-0555 and TCA-NGL-0511 are located within the Upper Santa Cruz and Ava Basin Sole Source Aquifer, the Proposed Action would require coordination with EPA and review through the SSA Program to determine whether the Proposed Action would have the potential to contaminate the sole source aquifer.

Impacts on floodplains would be negligible. The construction of tower sites, YUM-YUS-0535 and YUM-YUS-0533 would not affect the elevation or increase the velocity, frequency or

duration of flooding above the existing conditions at the proposed tower sites. The Proposed Action would not impede flows or result in major development within the Colorado River floodplain. Approximately 372 feet of road improvements associated with TCA-NCO-0529 would be located in the 100-year floodplain; however, the road improvements include repairs to the drainage structures and would improve the flow of flood waters in the area.

3.4.2.2 *Alternative 1*

Under Alternative 1, the impacts on water resources would be minor. Although the total amount of road improvements proposed for Alternative 1 is slightly greater (19.8 miles) than the amount of road improvements for the Proposed Action (19.2 miles), the impacts on surface water quality would be similar to those described in the Proposed Action. Impacts on wetlands or waters of the United States under Alternative 1 would be similar to those described for the Proposed Action. A total of 0.77 acre would be impacted by the proposed approach road improvements. Approximately 1.5 miles of road improvements are scheduled for the proposed tower sites in the Douglas groundwater basin. The Douglas basin is experiencing a groundwater deficit, and the water use associated with Alternative 1 would require 1.5 acre-feet of water to control fugitive dust during construction. Because TCA-NGL-0509, TCA-NGL-0507, TCA-NGL-0503 and TCA-NGL-0515 are located within the Upper Santa Cruz and Ava Basin Sole Source Aquifer, Alternative 1 would require coordination with the EPA and review through the SSA Program to determine whether the alternative would have the potential to contaminate the sole source aquifer. Impacts on the 100-year floodplain would be similar to those described for the Proposed Action.

3.4.2.3 *No Action Alternative*

The No Action Alternative would have a minor permanent impact on water resources in the region. The No Action Alternative would not require the use of water because there would be no construction; however, water resources in the region have been and would continue to be affected under the No Action Alternative. Illegal vehicle and foot traffic have created off-road vehicle routes, and off-road travel can alter hydrology, accelerate erosion and impact vegetation.

3.5 VEGETATIVE HABITAT

3.5.1 *Affected Environment*

The vegetative community in and around the Arizona RVSS project area varies from site to site and includes the Lower Colorado subdivisions of Sonoran Desertscrub (Photographs 3-1 and 3-2), Madrean Evergreen Woodland (Photograph 3-3), Chihuahuan Desertscrub (Photograph 3-4) and Semi-Desert Grassland (Photograph 3-5), at elevations ranging from approximately 94 feet to 4,958 feet above mean sea level (amsl) (Brown 1994).

GSRC conducted biological resources surveys at each of the proposed RVSS tower sites on September 12, 13, 14 and 15, 2011, December 6, 7, 8 and 9, 2011, and March 5, 6 and 7, 2012 (CBP 2012d). Weather conditions were generally good during each of these days. Each proposed tower site, new access road and any existing approach roads were surveyed. Pedestrian surveys consisted of a series of parallel transects that provided 100 percent visual coverage over an approximately 200-foot x 200-foot area at each tower site. The biologists searched for listed and sensitive species, signs of their presence and unique biological features (e.g., rocky outcrops,

burrows, rock shelters, bird nests) at and in the vicinity of each of the proposed tower sites and associated roads. Observations of vegetative habitat and floral communities were recorded, along with species diversity. Locations of sensitive natural resources were recorded using a Trimble Geo XT global positioning system unit with sub-meter accuracy.



Photograph 3-1. Overview of Sonoran Desertscrub Community within the Yuma Project Area



Photograph 3-2. Overview of Sonoran Desertscrub Community within the Ajo Project Area



Photograph 3-3. Overview of Madrean Evergreen Woodland Community within the Nogales Project Area



Photograph 3-4. Overview of Chihuahuan Desertscrub Community within the Naco Project Area



Photograph 3-5. Overview of Semi-Desert Grassland Community within the Douglas Project Area

Common woody vegetation observed in the upland areas varied from region to region. Vegetation near the proposed tower sites in the Yuma AOR consisted primarily of creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*) and dye bush (*Psoralea argemone*). Common woody vegetation in the Ajo AOR consisted primarily of blue paloverde (*Parkinsonia florida*), little-leaf paloverde (*P. microphylla*), velvet mesquite (*Prosopis velutina*), ocotillo (*Fouquieria splendens*), saguaro (*Carnegiea gigantea*), organ pipe cactus (*Stenocereus thurberi*) and limberbush (*Jatropha cuneata*). Vegetation near the Nogales sites consisted of several oak species (*Quercus* spp.), velvet mesquite, wait-a-minute bush (*Mimosa aculeatacarpa*) and a mix of grasses consistent with a Madrean Evergreen Woodland community.

Vegetation near the Naco and Douglas sites was indicative of Chihuahuan Desertscrub and Semi-Desert Grassland communities and consisted primarily of creosote bush, tar bush (*Flourensia cernua*), viscid acacia (*Acacia neovernicosa*), mariola (*Parthenium incanum*), oreganillo (*Aloysia wrightii*), honey mesquite (*Prosopis glandulosa*), Mexican bluewood (*Condalia mexicana*), wait-a-minute bush, sotol (*Dasyllirion wheeleri*) and ocotillo. Numerous annual and perennial forbs and grasses were relatively abundant at all sites.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

The Proposed Action would have a minor impact on vegetative habitat in the region. Construction of the proposed towers and access roads and repairs and improvements to associated approach roads would have a direct permanent impact on 64.5 acres of vegetative habitat and temporarily impact approximately 37.1 acres of vegetative habitat at 20 tower sites and associated roads across southern Arizona and extreme southeastern California (Table 3-10). The plant communities associated with the tower sites are locally and regionally common, and the permanent loss of approximately 64.5 acres of vegetation would not adversely affect the population viability of any plant species in the region.

Disturbance of up to 64.5 acres of vegetation could, however, result in conditions suitable for the establishment of non-native plant species. In order to ensure that the Proposed Action does not actively promote the establishment of additional non-native and invasive species in the area, BMPs (described in Section 5.0) would be implemented to minimize the spread and reestablishment of non-native vegetation. Vegetation removed from tower sites would be disposed of properly. Upon completion of construction, temporarily disturbed areas would be restored with native plantings, landscaped or allowed to revegetate naturally. These BMPs, as well as measures protecting vegetation in general, would reduce potential impacts from non-native plant species.

Table 3-10. Potential Impacts by Vegetation Community Type

Vegetation Community	Tower Site	Impacts on Vegetation	
		Permanent	Temporary
Arizona Upland Sonoran Desertscrub	TCA-AJO-0523 TCA-AJO-0553	14.62	8.67
Chihuahuan Desertscrub	TCA-DGL-0557 TCA-DGL-0565	6.12	3.03
Semidesert Grassland	TCA-NCO-0525 TCA-NCO-0529 TCA-NCO-0567 TCA-NGL-0511	27.75	11.12
Madrean Evergreen Woodland	TCA-NGL-0505 TCA-NGL-0507 TCA-NGL-0509 TCA-NGL-0555	5.80	4.5
Lower Colorado River Sonoran Desertscrub	YUM-YUS-0533 YUM-YUS-0535 YUM-YUS-0543 YUM-YUS-0547 YUM-YUS-0571 YUM-YUS-0573 YUM-YUS-0575 YUM-YUS-0577	10.19	9.74
TOTAL		64.5	37.1

Source: Pima County Department of Transportation 2006 and GSRC

3.5.2.2 *Alternative 1*

Under Alternative 1, impacts on vegetative habitats would be similar to those described for the Proposed Action; however, approximately 67.4 acres of vegetative habitat would be permanently impacted.

3.5.2.3 *No Action Alternative*

Under the No Action Alternative, no vegetative habitat would be disturbed or removed since construction of the proposed RVSS towers and associated access and approach roads would not occur.

3.6 WILDLIFE RESOURCES

3.6.1 *Affected Environment*

The vegetative communities of the Sonoran Desert biome within the Yuma and Ajo project area typically support an abundance of small mammals and reptiles, which provide forage for several species of predatory mammals and birds. Although the biome supports a diverse assemblage of wildlife, the general lack of vegetative structure, low plant diversity and extremely limited availability of water make the Sonoran desertscrub and creosote-sage communities particularly harsh for wildlife. A list of wildlife species observed during the biological resources surveys conducted by GSRC is provided in Appendix D.

3.6.2 Environmental Consequences

3.6.2.1 *Proposed Action*

The permanent loss of up to 64.5 acres and temporary degradation of approximately 37.1 acres of vegetation communities would have short-term, minor impacts on wildlife. Soil disturbance and operation of heavy equipment could result in the direct loss of less mobile individuals such as lizards, snakes and ground-dwelling species such as mice and rats. However, most wildlife would avoid any direct harm by escaping to surrounding habitat. The direct degradation and loss of habitat could also impact burrows and nests, as well as cover, forage and other important wildlife resources. The loss of these resources would result in the displacement of individuals that would then be forced to compete with other wildlife for the remaining resources. Although this resulting competition for resources could result in a reduction of total population size, such a reduction would be extremely minimal in relation to total population size and would not result in long-term effects on the sustainability of any wildlife species. BMPs outlined in Section 5.0 would reduce disturbance and loss of wildlife habitats.

The Proposed Action would have a long-term, minor adverse effect on migratory birds. There is a possibility that the proposed RVSS towers could pose hazards to migratory birds; however, since the monopole tower type does not use guy wires, the potential for adverse impacts is greatly reduced. Furthermore, tower construction would adhere to the USFWS interim guidelines and FAA guidelines and would be designed to reduce impacts on migratory birds (USFWS 2000). Similar to the effect of habitat degradation and loss on the sustainability of wildlife populations, the number and extent of bird strikes in relation to the size of migratory bird populations and the extent of the migratory flyway would be minor and would not affect sustainability of migratory bird populations in the region.

Noise associated with tower and road construction, road improvements and road maintenance would result in temporary, minor impacts on wildlife. Elevated noise levels associated with construction and maintenance activities would only occur during the duration of these activities. The effects of this disturbance would include temporary avoidance of work areas and competition for unaffected resources. Blasting activities associated with improvements on the approach road to TCA-DGL-0565 may cause egg breakage or general flight responses from wildlife. BMPs as outlined in Section 5.0 would reduce noise associated with operation of heavy equipment.

Noise levels associated with the operation and maintenance of the towers would have a permanent, minor impact on wildlife species. The permanent increase in noise levels associated with operation of the proposed tower sites (i.e., backup generators) would be sporadic, only occurring when this equipment is operating. It is anticipated that wildlife would become accustomed to these intermittent and minimal increases in noise, and that subsequent avoidance of tower sites and any adjacent habitats would be minor.

The use of spotlights at 12 proposed tower sites (see Table 2-3) could also disturb wildlife adjacent to the proposed towers. However, on average, the spotlights would only be used twice a night for a period of approximately 5 minutes for each use. Similar to impacts associated with the permanent increase in noise, it is anticipated that some wildlife would become accustomed to these intermittent increases in light. Subsequent avoidance of tower sites and any adjacent

habitats would be minimal. Ultimately, the effects of increased noise and light could displace some individual wildlife species and result in localized competition for resources. However, the extent of these impacts would not decrease the sustainability of wildlife populations in the region.

The Proposed Action could result in indirect and long-term beneficial impacts on wildlife by reducing the adverse impacts of CBV activities in the project area (such as, trampled vegetation and habitat, compacted soils, collapsed subterranean tunnels and burrows, garbage and human waste and wildfires). The proposed RVSS towers would enhance CBP's detection capabilities and increase the efficiency of operational activities within the area of tower coverage. Enhancement of detection capabilities and interdiction efficiency would increase deterrence of CBV activity within the area of tower coverage.

3.6.2.2 *Alternative 1*

Under Alternative 1, impacts on wildlife and wildlife habitats would be similar to those discussed for the Proposed Action; however, approximately 67.4 acres of wildlife habitat would be permanently impacted.

3.6.2.3 *No Action Alternative*

Under the No Action Alternative, no direct impacts on wildlife habitats would occur. CBP's detection capabilities would not be enhanced under the No Action Alternative. Illegal off-road vehicle and pedestrian traffic would continue to disturb wildlife species, cause individuals to avoid resources in areas of high illegal traffic volume and disturb or degrade additional acres of wildlife habitat.

3.7 PROTECTED SPECIES AND CRITICAL HABITATS

3.7.1 Affected Environment

The ESA defines an endangered species as a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered. Species may be considered endangered or threatened when any of the five following criteria occurs: (1) current/imminent destruction, modification or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting continued existence. In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which the USFWS has sufficient information to support proposals to list as threatened or endangered under the ESA of 1973. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

3.7.1.1 *Federally Listed Species*

There are 26 Federally endangered, 9 threatened and 12 candidate species potentially occurring in Yuma, Pima, Santa Cruz and Cochise counties in Arizona, and Imperial County, California

(USFWS 2011a, USFWS 2012a, USFWS 2012b, USFWS 2012c and USFWS 2012d). Of these Federally listed and candidate species, eight have the potential to occur within the project area: southwestern willow flycatcher, Mexican spotted owl, lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), Chiricahua leopard frog, Sonoran pronghorn (*Antilocapra americana sonoriensis*), jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*) and Sonoran desert tortoise (*Gopherus agassizii*) (Table 3-11).

Seventeen Federally listed species have designated Critical Habitat in Yuma, Pima, Santa Cruz, Cochise or Imperial counties: Mexican spotted owl, peninsular bighorn sheep (*Ovis canadensis*), razorback sucker (*Xyrauchen texanus*), desert pupfish (*Cyprinodon macularius*), Gila chub (*Gila intermedia*), Sonora chub (*Gila ditaenia*), beautiful shiner (*Cyprinella formosa*), Yaqui catfish (*Ictalurus pricei*), Yaqui chub (*Gila purpurea*), Mojave desert tortoise, Chiricahua leopard frog (*Lithobates chiricahuensis*), southwestern willow flycatcher (*Empidonax traillii extimus*), Peirson's milk vetch (*Astragalus magdalenae* var. *peirsonii*), Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*), loach minnow (*Tiaroga cobitis*), spikedace (*Meda fulgida*) and San Bernardino springsnail (*Pyrgulopsis thompsoni*) (see Table 3-8). One species, southwestern willow flycatcher, also has proposed Critical Habitat in Yuma, Pima, Santa Cruz and Cochise counties. While these species have designated or proposed Critical Habitat near the project area, only two of the proposed RVSS tower sites (TCA-NGL-0505 and TCA-NGL-0507) are located within designated Critical Habitat for the Mexican spotted owl (Table 3-11).

A brief description of the eight species with potential to occur within the project area is presented in the following paragraphs.

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a small olive to brown colored passerine bird (Photograph 3-6) found in riparian habitats from southern California, Arizona, Nevada, Utah, Colorado, New Mexico, to extreme southwestern Texas (USFWS 2002).

This species is known to migrate and winter in southern Mexico and northern South America. The southwestern willow flycatcher utilizes a variety of riparian habitats for breeding from sea level to 8,500 feet amsl. At the lower elevation breeding sites, this bird tends to prefer riparian patches that can vary from dense, linear, contiguous stands to a more irregular-shaped mosaic patchwork of dense vegetation and open space (USFWS 2002). Vegetation at southwestern willow flycatcher breeding sites can vary from stands of native willow (*Salix* spp.) and broadleaf trees and shrubs to monotypic stands of exotic species such as salt cedar (*Tamarix* spp.).



Photograph 3-6. Southwestern Willow Flycatcher
(Source: USFWS)

One of the common unifying characteristics of preferred breeding habitat is proximity to slow-moving or standing water of stream reaches generally within 60 feet of surface water or saturated soils (USFWS 2002). Southwestern willow flycatchers typically arrive on their breeding grounds in late April and can spend 3 to 4

Table 3-11. Federally Listed Species Potentially Occurring within or near the Project Area

Common (<i>Scientific Name</i>)	Federal Status*	Habitat	County	Potential to Occur within or near the Project Area
BIRDS				
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E, CH (Proposed and Designated)**	Inhabits riparian forests and shrub willow patches along high-elevation streams and meadows and broad-leaf deciduous forest along desert streams.	Imperial, Yuma, Pima, Santa Cruz, Cochise	Yes-YUM-YUS-0533 occurs within suitable habitat and YUM-YUS-0535 and YUM- YUS-0571 are within 0.25 mile of proposed Critical Habitat.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	C	Inhabits woodlands with dense undergrowth, overgrown orchards and pastures, moist thickets and willow (<i>Salix</i> spp.) groves along stream banks.	Yuma, Pima, Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	E	Inhabits dense shrubs and trees along riparian corridors.	Imperial	No-No suitable habitat present and not known to occur within the project area.
California least tern (<i>Sterna antillarum browni</i>)	E	Inhabits bare or sparsely vegetated sand, sand bars, gravel pits or exposed flats along shorelines of inland rivers, lakes reservoirs or drainage systems.	Pima	No-No suitable habitat present and not known to occur within the project area.
Yuma clapper rail (<i>Rallus longirostris yumanensis</i>)	E	Inhabits freshwater marshes containing dense stands of cattail (<i>Typha</i> spp.) and bulrush (<i>Juncus</i> spp.) and mature stands of emergent vegetation with shallow margins.	Imperial, Yuma	No-No suitable habitat present at project area.
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	T, CH	Inhabits steep canyons and dense forests with multilayered foliage structure.	Santa Cruz, Pima, Cochise	Yes- TCA-NGL-0507 and TCA-NGL-0509 are within designated Critical Habitat.
Masked bobwhite (<i>Colinus virginianus ridgewayi</i>)	E	Inhabits desert grasslands with a diversity of dense native grasses, forbs and brush.	Pima	No-No suitable habitat present and not known to occur within the project area.
Sprague's pipit (<i>Anthus Spragueii</i>)	C	Inhabits open, sparsely vegetated grassland and pastures.	Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Northern aplomado falcon (<i>Falco femoralis spentrionalis</i>)	NEP***	Inhabits grassland and savannah communities.	Cochise	No-No suitable habitat present and not known to occur within the project area.

Table 3-11, continued

Common (Scientific Name)	Federal Status*	Habitat	County	Potential to Occur within or near the Project Area
MAMMALS				
Lesser long-nosed bat (<i>Leptonycteris curasoae yerbabuenae</i>)	E	Inhabits old mines and caves at the base of mountains near alluvial fans in areas vegetated with agave (<i>Agave</i> spp), saguaro (<i>Carnegiea gigantea</i>) and organ pipe cactus (<i>Cereus thurberi</i>).	Yuma, Pima, Santa Cruz, Cochise	Yes-TCA-AJO-0523, TCA-AJO-0553, TCA-NGL-0507, TCA-NGL-0511, TCA-NCO-0525, TCA-NCO-529, TCA-NCO-0567, and TCA-DGL-0557 are proximal to known roost sites, and saguaro, organ pipe cacti or agaves are present within the project footprint.
Sonoran pronghorn (<i>Antilocapra americana sonoriensis</i>)	E	Inhabits open plains of Sonoran Desert scrub in Pima, Yuma and Maricopa counties.	Yuma, Pima	Yes-TCA-AJO-0553 is located within the known range of Sonoran pronghorn.
Peninsular bighorn sheep (<i>Ovis canadensis</i>)	E, CH	Inhabits sparsely vegetated canyons and steep rocky slopes from northern San Jacinto Mountains southward into the Volcan Tres Virgenes Mountains.	Imperial	No-No suitable habitat present and not known to occur within the project area.
Jaguar (<i>Panthera onca</i>)	E	Inhabits Sonoran desert scrub up through subalpine coniferous forests.	Santa Cruz, Pima, Cochise	Yes-TCA-NGL-0503, TCA-NGL-0505, TCA-NGL-0507, TCA-NGL-0509, TCA-NGL-0511, TCA-NGL-0515, TCA-NGL-0555, TCA-NCO-0525, TCA-NCO-0529, TCA-NCO-0567, TCA-DGL-0557, TCA-DGL-0559 and TCA-DGL-0565 are within proximity to potential jaguar habitat.
Ocelot (<i>Leopardus pardalis</i>)	E	Inhabits humid tropical and sub-tropical forests, savannahs and semi-arid thornscrub.	Santa Cruz, Pima, Cochise	Yes-TCA-NGL-0503, TCA-NGL-0505, TCA-NGL-0507, TCA-NGL-0509, TCA-NGL-0511, TCA-NGL-0515, TCA-NGL-0555, TCA-NCO-0525, TCA-NCO-0529, TCA-NCO-0567, TCA-DGL-0557, TCA-DGL-0559 and TCA-DGL-0565 are within proximity to potential ocelot habitat.

Table 3-11, continued

Common (Scientific Name)	Federal Status*	Habitat	County	Potential to Occur within or near the Project Area
FISH				
Razorback sucker (<i>Xyrauchen texanus</i>)	E, CH	Inhabits perennial fresh waters of the lower Colorado River Basin.	Imperial, Yuma	No-No suitable habitat present and not known to occur within the project area.
Desert pupfish (<i>Cyprinodon macularius</i>)	E, CH	Inhabits desert springs, tributary and slow-moving reaches of larger river systems.	Imperial, Pima, Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Gila chub (<i>Gila intermedia</i>)	E, CH	Inhabits pools, springs, cienegas and streams.	Pima, Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Gila topminnow (<i>Poeciliopsis occidentalis occidentalis</i>)	E	Inhabits small streams, springs, cienegas and vegetated shallows.	Pima, Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Sonora chub (<i>Gila ditaenia</i>)	T, CH	Inhabits perennial and intermittent small to moderate streams with boulders and cliffs.	Santa Cruz	No-No suitable habitat present and not known to occur within the project area.
Beautiful shiner (<i>Cyprinella 3-24bscure</i>)	T, CH	Inhabits streams and ponds with sand, gravel and rocky substrate.	Cochise	No-No suitable habitat present and not known to occur within the project area.
Loach minnow (<i>Tiaroga cobitis</i>)	E, CH	Inhabits swift riffles with cobble and gravel substrate.	Cochise	No-No suitable habitat present and not known to occur within the project area.
Spikedace (<i>Meda fulgida</i>)	E, CH	Inhabits moderate to large streams in moderate to swift currents.	Cochise	No-No suitable habitat present and not known to occur within the project area.
Yaqui catfish (<i>Ictalurus pricei</i>)	T, CH	Inhabits slow-moving waters in moderate to large streams with sand and rock substrate.	Cochise	No-No suitable habitat present and not known to occur within the project area.
Yaqui chub (<i>Gila purpurea</i>)	E, CH	Inhabits deep pools of small streams near undercut banks and debris, pools associated with springheads and artificial ponds.	Cochise	No-No suitable habitat present and not known to occur within the project area.
Yaqui topminnow (<i>Poeciliopsis occidentalis sonoriensis</i>)	E	Inhabits shallow areas of small to moderate streams, springs and cienegas; often in areas with debris and aquatic vegetation.	Cochise	No-No suitable habitat present and not known to occur within the project area.

Table 3-11, continued

Common (Scientific Name)	Federal Status*	Habitat	County	Potential to Occur within or near the Project Area
AMPHIBIANS				
Chiricahua leopard frog (<i>Lithobates chiricahuensis</i>)	T, CH	Inhabits streams, rivers, backwaters, ponds and stock tanks that are mostly free from introduced fish.	Pima, Santa Cruz, Cochise	Yes-Suitable habitat is present within the project area. However, no occupied habitat is known to occur near the proposed tower sites.
Sonora tiger salamander (<i>Ambystoma tigrinum stebbinsi</i>)	E	Inhabits stock tanks and impounded ciénegas in San Rafael Valley, Huachuca Mountains.	Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Arizona treefrog (<i>Hyla wrightorum</i>)	C	Inhabits aquatic habitats including stock tanks, ciénegas and small streams.	Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
REPTILES				
Mojave desert tortoise (<i>Gopherus agassizii</i>)	T, CH	Inhabits desert scrub and Joshua tree (<i>Yucca brevifolia</i>) woodlands across valley floors and alluvial fans.	Imperial	No-No suitable habitat present and not known to occur within the project area.
Sonoyta mud turtle (<i>Kinosternon sonoriense</i> <i>longifemorale</i>)	C	Inhabits Quitobaquito Springs in Organ Pipe Cactus National Monument.	Pima	No-No suitable habitat present at project area.
Northern Mexican gartersnake (<i>Thamnophis eques megalops</i>)	C	Inhabits ciénegas, stock tanks, large river woodlands and streamside gallery forest.	Pima, Santa Cruz, Cochise	No-No suitable habitat present at project area.
Tucson shove-nosed snake (<i>Chionactis occipitalis klauberti</i>)	C	Inhabits creosote bush (<i>Larrea</i> <i>tridentata</i>) and mesquite (<i>Prosopis</i> <i>velutina</i>) floodplains with soft, sandy soils in Sonoran Desertscrub between 785-1,662 feet amsl.	Pima	No-No suitable habitat present and not known to occur within the project area.
Sonoran desert tortoise (<i>Gopherus agassizii</i>)	C	Inhabits rocky, steep slopes and bajadas associated with Sonoran desert scrub between 904 and 4,198 feet amsl.	Pima, Santa Cruz, Cochise	Yes- TCA-AJO-0523 and TCA-AJO-0553
New Mexico ridge-nosed rattlesnake (<i>Crotalus willardi obscurus</i>)	T	Inhabits rocky hillsides and canyons in pine-oak woodland.	Cochise	No-No suitable habitat present and not known to occur within the project area.

Table 3-11, continued

Common (Scientific Name)	Federal Status*	Habitat	County	Potential to Occur within or near the Project Area
INVERTEBRATES				
Stephan's rifle beetle (<i>Hetrelmis stephani</i>)	C	Inhabits free-flowing springs and seeps including Sylvester Spring in Madera Canyon on the Coronado National Forest.	Santa Cruz	No-No suitable habitat present and not known to occur within the project area.
Huachuca springsnail (<i>Pyrgulopsis thomsoni</i>)	C	Inhabits aquatic areas, including small springs with ample vegetation and slow to moderate flow at Fort Huachuca.	Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
San Bernardino springsnail (<i>Pyrgulopsis bernardina</i>)	E, CH	Inhabits springs with substrates comprised of cobbles, gravel, woody debris and aquatic vegetation.	Cochise	No-No suitable habitat present and not known to occur within the project area.
Rosemont talussnail (<i>Sonorella rosenontensis</i>)	C	Inhabits talus slopes composed of volcanic rock and limestone.	Pima	No-No suitable habitat present and not known to occur within the project area.
Quino checkerspot butterfly (<i>Euphydryas editha quino</i>)	E	Inhabits meadows and upland sage scrub/chapparral habitat where California plantain (<i>Plantago erecta</i>) or owl's clover (<i>Castilleja exserta</i>) is present.	Imperial	No-No suitable habitat present and not known to occur within the project area.
PLANTS				
Peirson's milk vetch (<i>Astragalus magdalenae</i> var. <i>peirsonii</i>)	T, CH	Inhabits the bowls, swales and slopes of active windblown dunes and is known from the western side of the Algodones Dunes in southeast California.	Imperial	No-No suitable habitat present and not known to occur within the project area.
Canelo Hills ladies'-tresses (<i>Spiranthes delitescens</i>)	E	Inhabits finely grained, highly organic, saturated soils of cienegas.	Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Nichol Turk's head cactus (<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>)	E	Inhabits unshaded micro sites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles of limestone mountains at 2,400–4,100 feet amsl.	Pima	No-No suitable habitat present and not known to occur within the project area.

Table 3-11, continued

Common (Scientific Name)	Federal Status*	Habitat	County	Potential to Occur within or near the Project Area
Huachuca water umbel (<i>Lilaeopsis schaffneriana</i> spp. <i>recurva</i>)	E, CH	Inhabits saturated soils and shallow waters associated with cienegas or marshy wetlands within Sonoran desert scrub, grassland or oak woodland and conifer forest.	Pima, Santa Cruz, Cochise	No-No suitable habitat present and not known to occur within the project area.
Kearney's blue star (<i>Amosonia kearneyana</i>)	E	Inhabits west-facing drainages in the Baboquivari Mountains at 3,600-3,800 feet amsl.	Pima	No-No suitable habitat present and not known to occur within the project area.
Pima pineapple cactus (<i>Coryphantha scheeri</i> var. <i>robustispina</i>)	E	Inhabits alluvial fans in lower Sonoran Desert scrub and Semi-desert Grassland habitat dominated by whitethorn acacia, velvet mesquite, snakeweed (<i>Gutierrezia</i> spp.), triangle- leaf bursage (<i>Ambrosia deltoidea</i>) and various other cacti and grasses.	Pima, Santa Cruz	No-No suitable habitat present and not known to occur within the project area.
Acuna cactus (<i>Echinomastus erectocentrus</i> var. <i>acumensis</i>)	C	Inhabits well-drained knolls and gravel ridges in Sonoran desertscrub between 1,300-2,000 feet amsl.	Pima	No-No suitable habitat present and not known to occur within the project area.
Cochise pincushion cactus (<i>Coryphantha robbinsorum</i>)	T	Inhabits Permian limestone hills in semidesert grassland.	Cochise	No-No suitable habitat present and not known to occur within the project area.
Lemmon fleabane (<i>Erigeron lemmonii</i>)	C	Inhabits rocky ledges and crevices in canyons within pine-oak woodland. Known from one site on Fort Huachuca.	Cochise	No- Not known to occur within the project area.

Sources: USFWS 2011a, USFWS 2012a, USFWS 2012b, USFWS 2012c, USFWS 2012d

* Federal Status: E = endangered; T = threatened; C = candidate; CH = critical habitat; NEP = non-essential population

** Final designated Critical Habitat determination was made on 7/22/1997 and 10/19/2005. However, on 8/15/2011, USFWS submitted designation of revised Critical Habitat for southwestern willow flycatcher; this ruling has not yet been made final.

*** July 2006 Final Rule established the northern aplomado falcon as a NEP for all of Arizona and New Mexico.

months there. Migrant southwestern willow flycatchers may be found in riparian habitat that is unsuitable for breeding, and these areas may be critical for survival (USFWS 2002).

None of the proposed RVSS sites are within the proposed Critical Habitat for the southwestern willow flycatcher. However, YUM-YUS-0535 and YUM-YUS-0571 are within 0.25 mile of the proposed Critical Habitat (Figure 3-1). YUM-YUS-0533 is not within proposed Critical Habitat but is located within suitable habitat for the southwestern willow flycatcher. All three towers are located within a migratory pathway.

Mexican Spotted Owl

In the United States, the Mexican spotted owl (Photograph 3-7) occupies warm-temperate and cold-temperate forests from the southern Rocky Mountains in Colorado and the Colorado Plateau in southern Utah southward through Arizona and New Mexico (USFWS 1993). A discontinuous population also occurs in Mexico with a range extending from the Sierra Madre Occidental and Oriental mountains southward to the southern end of the Mexican Plateau. In southeast Arizona, the species typically occurs in mixed-conifer forests, but the species utilizes a variety of habitat types throughout its range. Habitat characteristics that favor the Mexican spotted owl are usually found in old growth forests at least 200 years of age. These characteristics include a dense multilayered canopy with numerous snags and downed woody matter. Nesting habitat is commonly associated with at least some old-growth trees, steep slopes at elevations from 6,000 to 8,000 feet amsl and a northern or eastern aspect.



Photograph 3-7. Mexican Spotted Owl
(Source: USFWS)

The primary constituent elements (PCE) for Mexican spotted owl Critical Habitat were determined from studies of their habitat requirements and information provided in the Recovery Plan (USFWS 2011f). Since owl habitat can include both canyon and forested areas, PCEs were identified in both areas. The PCEs provide for one or more of the Mexican spotted owl's habitat needs for nesting, roosting, foraging and dispersing. These PCEs are described below.

Primary constituent elements related to forest structure include:

- A range of tree species, including mixed conifer, pine-oak and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with a trunk diameter of 12 inches or more in diameter-at-breast-height (dbh) (i.e., 4.5 feet from the ground)
- A shade canopy created by the tree branches covering 40 percent or more of the ground
- Large dead trees (snags) with a trunk diameter of at least 12 inches dbh

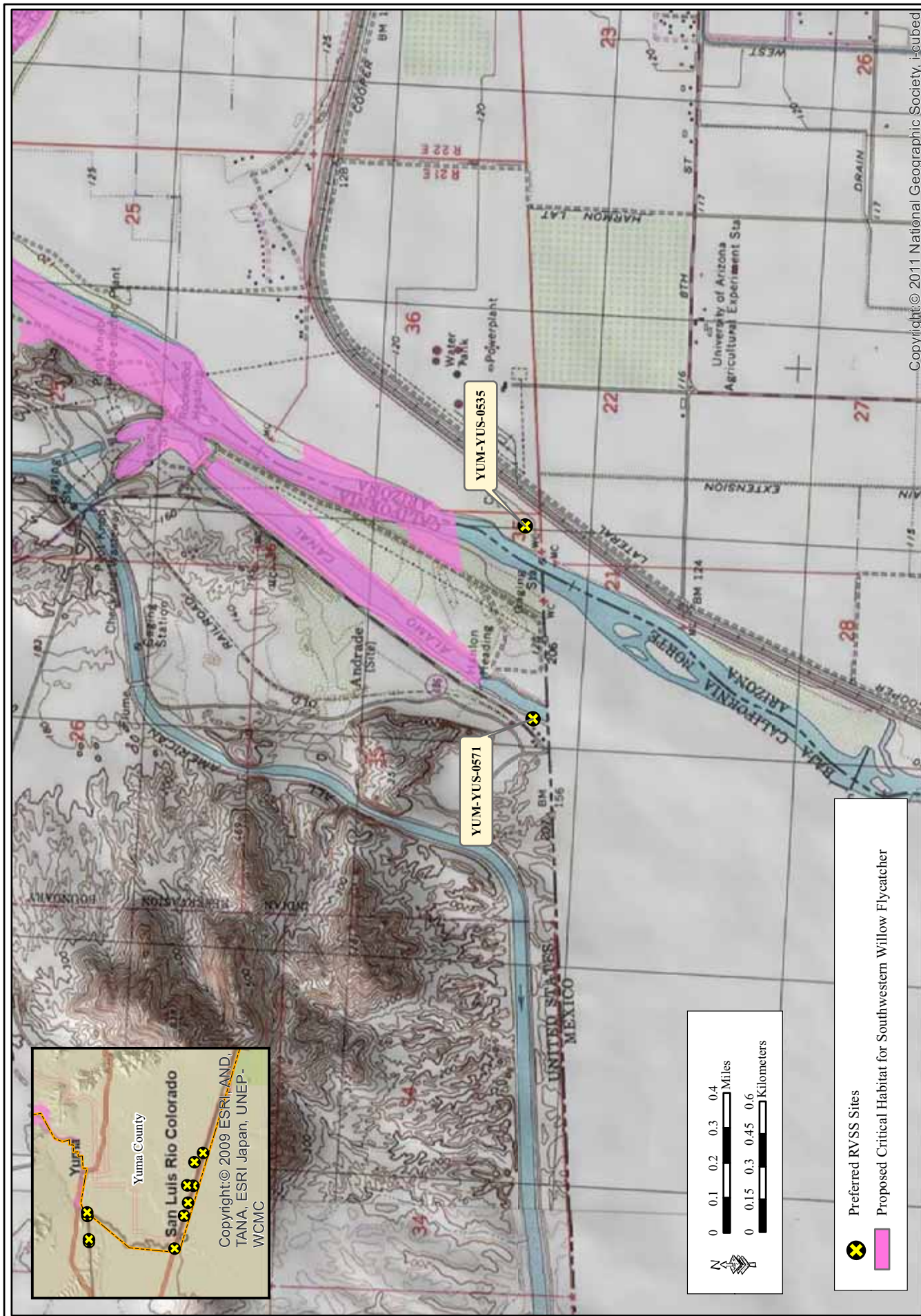


Figure 3-1. Proposed Towers in Yuma Station's AOR and Proposed Critical Habitat for Southwestern Willow Flycatcher

Primary constituent elements related to canyon habitat include one or more of the following:

- Presence of water (often providing cooler and often higher humidity than the surrounding areas)
- Clumps or stringers of mixed-conifer, pine-oak, pinyon-juniper and/or riparian vegetation
- Canyon wall containing crevices, ledges or caves
- High percent of ground litter and woody debris

Primary constituent elements related to maintenance of adequate prey species include:

- High volumes of fallen trees and other woody debris
- A wide range of tree and plant species, including hardwoods
- Adequate levels of residual plant cover to maintain fruits, seeds and allow plant regeneration

Nesting pairs typically establish a home range of about 1,000 acres, which provides year-round access to nesting, roosting and foraging areas (USFWS 2011e). Nesting has been observed on a variety of substrates, including artificial platforms, tree cavities and cliff ledges. Male and female owls begin roosting together in February, and the female begins laying eggs as early as March. Incubation lasts 30 days, and most eggs are hatched by the end of May. Fledging occurs from May through October when young owls become fully independent. Mexican spotted owls prey on a variety of small animals hunting from perches and attacking over short distances.

In 2004, Critical Habitat was designated for the Mexican spotted owl in several Arizona counties, including Pima, Santa Cruz and Cochise (USFWS 2004) (Figure 3-2). Proposed tower sites TCA-NGL-0507 and TCA-NGL-0509 and the associated access roads are located in the eastern portion of designated Critical Habitat (Unit BR-W-13: Atascosa and Pajarito Mountains Area) in the CNF for the Mexican spotted owl (Figure 3-3). However, the nearest PAC is located approximately 4 miles west of the proposed tower sites.

The dominant vegetation type in the project area is a mix of native and introduced grass species, with both annual and perennial grasses present. Woody vegetation noted at the proposed tower sites and on the surrounding landscape includes velvet mesquite (*Prosopis velutina*), oak trees (*Quercus* spp.) and wait-a-minute bush (*Acacia greggii*). Tree density and diversity is low, and no oak trees with a dbh greater than 12 inches were observed within or near the survey area.

No PCEs are present within the proposed tower site footprints. The riparian forest along the TCA-NGL-0507 exhibits 1 PCE related to forest structures (a shade canopy created by tree branches covering 40 percent or more of the ground) and 1 PCE related to maintenance of prey abundance and adequate levels of residual plant cover to maintain fruits and seeds and to allow plant regeneration. It is possible that owls could use the habitats located in and around the proposed towers; however, these occurrences are likely to be infrequent, and the project area represents less than 1 percent of similar habitats within the Critical Habitat unit.

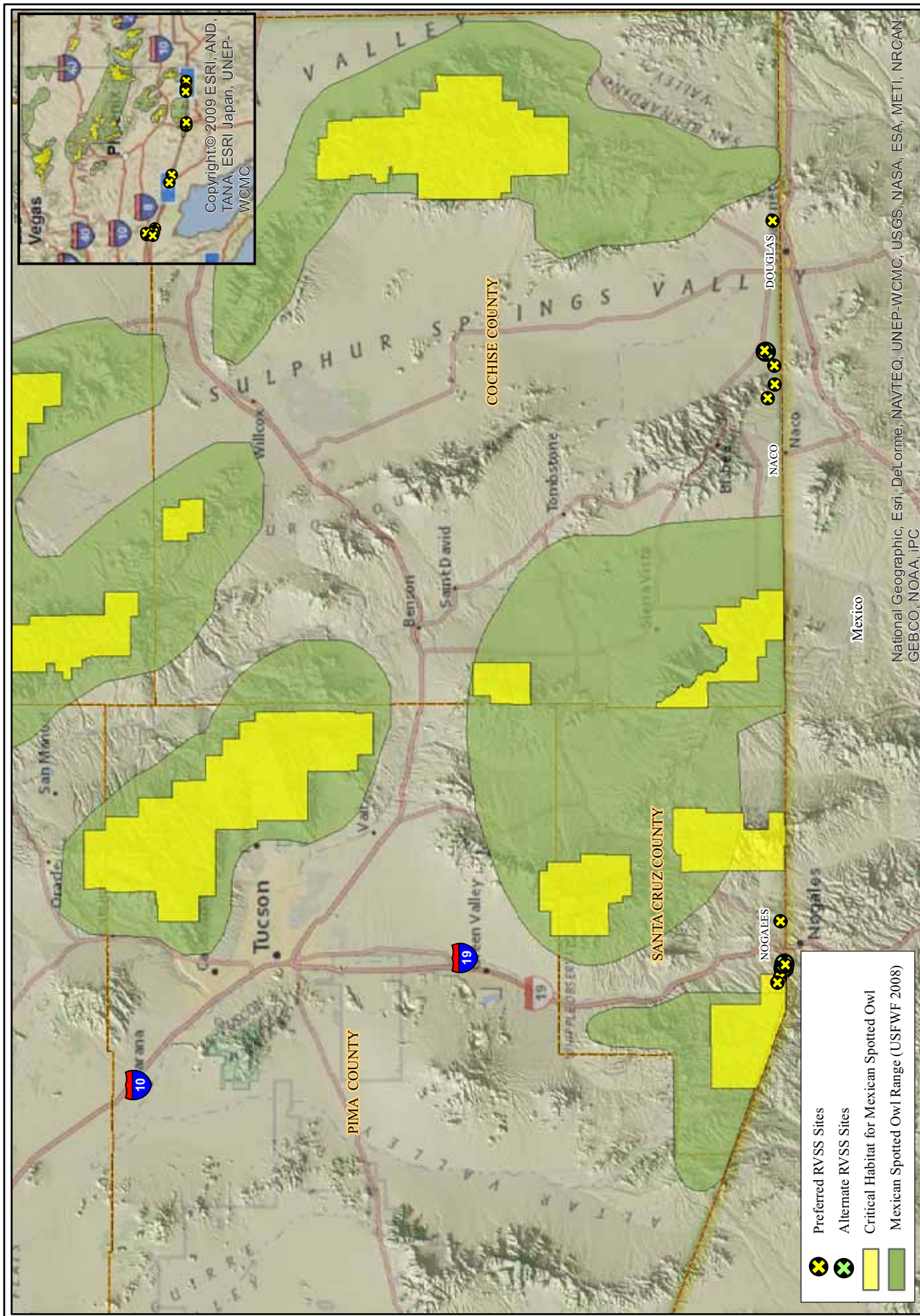
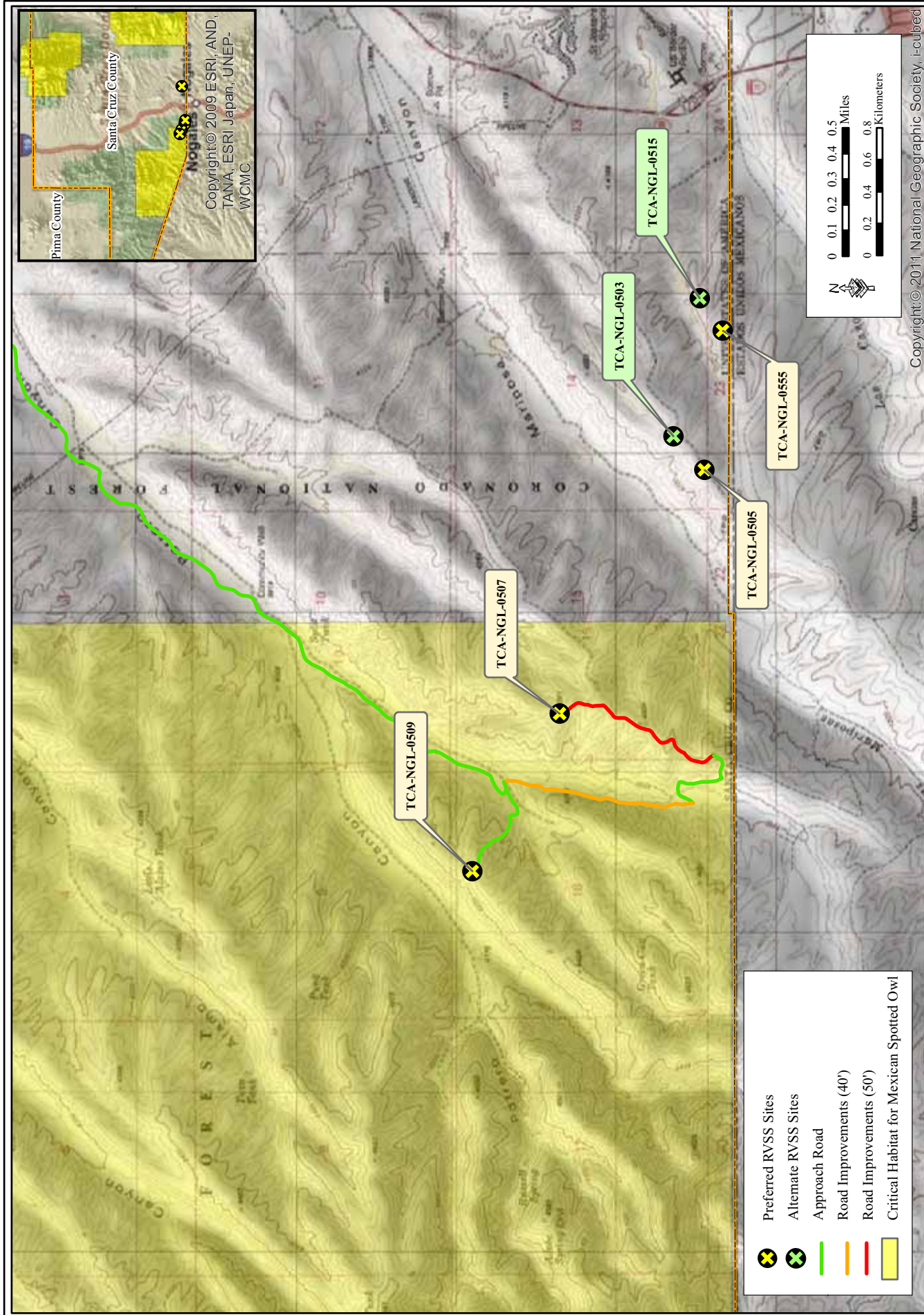


Figure 3-2. Proposed and Alternate Towers and Mexican Spotted Owl Critical Habitat and Range



Copyright © 2011, National Geographic Society, iObbed

Figure 3-3. Proposed and Alternate Tower Locations near Mexican Spotted Owl Critical Habitat

Lesser Long-nosed Bat

The lesser long-nosed bat's range extends from southern Arizona and extreme southwestern New Mexico, through western Mexico and south to El Salvador (USFWS 1997) (Photograph 3-8). Lesser long-nosed bats primarily utilize natural caves and abandoned mines for roosting, but can transiently roost among overhanging rocks and other shelters. Occupied roosts have been documented from eastern portions of the CPNWR, north as far as Phoenix, and east as far as the Animas Valley in New Mexico (AGFD 2003). Use of roosting sites may vary depending upon seasonal fluctuations in the timing of forage availability. Thus, some roosts may be occupied or unoccupied through parts or all of a breeding season. Female lesser long-nosed bats arrive at known maternity roosts in southwest Arizona as early as April continuing through mid-July (USFWS 1997). These maternity colonies begin to disband by September. Both males and females can be found at transient or maternity roosts from September to as late as early November.



Photograph 3-8. Lesser Long-nosed Bat
(Source: D. Buecher)

Food requirements of the lesser long-nosed bat are very specific. The lesser long-nosed bat is a nectar-, pollen- and fruit-eating bat. In Arizona, they primarily feed upon Palmer's agave, Parry's agave, desert agave (*Agave deserti*) and possibly amole (*Agave schottii*). Cacti fed upon include saguaro and organ pipe cactus. Adequate numbers of flowers and fruits are required within foraging range of day roosts and along migration routes to support large numbers of this bat. Location of good feeding sites plays an important role in determining availability of potential roosting sites and roost/food requirements must be considered jointly when discussing the habitat requirements of this bat.

Lesser long-nosed bats are known to travel up to 36 miles to reach suitable concentrations of forage. A total of 126 Palmer's agaves, 206 saguaros and 11 organ pipe cacti were observed within the survey area of eight proposed tower sites: TCA-AJO-0523, TCA-AJO-0553, TCA-NGL-0507, TCA-NGL-0511, TCA-NCO-0525, TCA-NCO-0529, TCA-NCO-0567 and TCA-DGL-0557. The presence of these species indicates potential foraging opportunities for lesser long-nosed bats. No known lesser long-nosed bat roost sites or potential roosting habitat were observed within or adjacent to the proposed project sites; however, all of the proposed Tucson Sector tower locations are within 30 miles of known roosts (Figure 3-4). There are 3 non-maternity roost sites located within 5 miles of 2 proposed tower sites, TCA-AJO-0553 and TCA-AJO-0523 (Figure 3-4).

Sonoran Pronghorn

Sonoran pronghorn (Photograph 3-9) inhabit one of the hottest and driest portions of the Sonoran Desert. They forage on a large variety of perennial and annual plant species. During drought years, cacti are a major dietary component (i.e., up to 44 percent). Consumption of cacti, especially chain fruit cholla, provides a source of water during hot, dry conditions. Other important plant species in the diet of the Sonoran pronghorn include pigweed (*Amaranthus*



Figure 3-4. Proposed and Alternate Towers in Tucson Sector Towers and Lesser Long-nosed Bat Roost Sites

palmeri), ragweed (*Ambrosia* spp.), locoweed (*Astragalus* sp.), brome (*Bromus* sp.) and snakeweed (*Gutierrezia sarothrae*). Sonoran pronghorn will move in response to spatial limitations in forage availability. Water intake from forage is not adequate to meet minimum water requirements; therefore, Sonoran pronghorn need and readily use both natural and artificial water sources.

Sonoran pronghorn rut from July to September and have been observed with newborn fawns from February through May. Parturition corresponds with annual spring forage abundance. Fawning areas have been documented in the Mohawk Dunes and the bajadas of Sierra Pinta, Mohawk, Bates, Growler and Puerto Blanco mountains. Sonoran pronghorn usually give birth to twins, and fawns suckle for about 2 months. Female Sonoran pronghorn gather with fawns, and fawns sometimes form nursery groups. Sonoran pronghorn typically form small herds of up to 21 animals.

One preferred RVSS site (TCA-AJO-0553) and its associated road are located within the current range of the Sonoran pronghorn (Figure 3-5). If present, pronghorn would be in the vicinity of the tower during the spring and summer.

Jaguar

The jaguar is the largest and most robust of the North American cats (Photograph 3-10). The southwestern United States and Sonora, Mexico, are the extreme northern limits of the jaguar's range, which extends through southern Mexico, into Central and South America to northern Argentina (Hatten et al. 2002). The jaguar is typically found near water in the warm tropical climate of savannahs and forests. Information on jaguar ecology and behavior, especially at the northern edge of the species' range, is very limited.

The jaguar's home range is highly variable and is dependent on topography, prey abundance and the population density of resident jaguars (Brown and Gonzalez 2001). Jaguar distribution patterns over the last 50 years and recent observations of individuals suggest that southeast Arizona is the most likely area for jaguar occurrence in the United States (Hatten et al. 2002). In 2001, the Borderlands Jaguar Detection Project founded by Jack L. and Mary Childs was initiated to systematically survey for jaguars in southeastern Arizona. During this project, McCain and Childs (2008) reported that two male jaguars and a possible third were documented in southeastern Arizona between March 2001 and July 2007. One of these animals (referred to as



Photograph 3-9. Sonoran Pronghorn
(Source: USFWS)



Photograph 3-10. Jaguar
(Source: USFWS)



August 2012

“Macho B”) was documented moving between the Atascosa Mountain complex and the Baboquivari Mountain complex, through a variety of biotic communities including Sonoran desert scrub and oak woodland at elevations ranging between approximately 2,900 and 5,200 feet in Santa Cruz and Pima counties (McCain and Childs 2008). There have been at least five confirmed jaguar sightings in Cochise County during the 50-year period from 1944 to 1994 (Girmendonk 1994). Most recently, an adult male jaguar was observed in an undisclosed mountain range in Cochise County in November 2011. This jaguar was treed by a pack of dogs belonging to a mountain lion hunter. AGFD confirmed the sighting through photos and a video taken by the hunter (AGFD 2011a).

Jaguars can travel long distances and may transiently use a wide variety of habitats in Cochise and Santa Cruz counties, including habitats within the project area. As such, TCA-NGL-0503, TCA-NGL-0505, TCA-NGL-0507, TCA-NGL-0509, TCA-NGL-0511, TCA-NGL-0515, TCA-NGL-0555, TCA-NCO-0525, TCA-NCO-529, TCA-NCO-0567, TCA-DGL-0557, TCA-DGL-0559 and TCA-DGL-0565 and their associated roads are located within potential jaguar habitat (Figure 3-6, 3-7, and 3-8). The proposed tower sites have been previously utilized as turnarounds or observation areas, are adjacent to existing roadways and have been substantially disturbed. Several of the towers are within a few miles of urban centers and all are near roads frequently used by USBP, land managers and the general public.

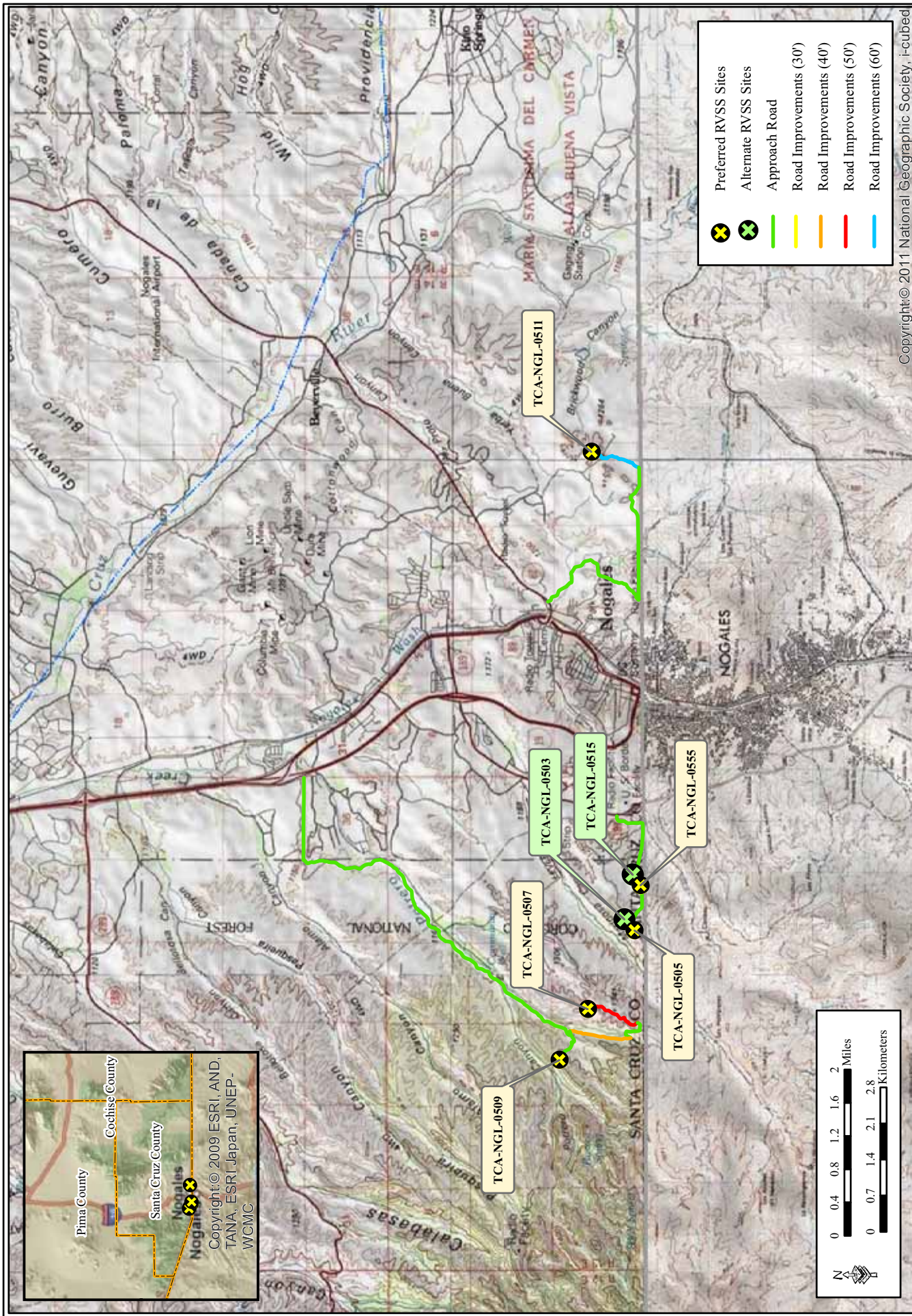
Ocelot

The ocelot's (Photograph 3-11) range historically included the southern United States and northern Mexico (USFWS 1990, AGFD 2004). Although the greatest abundance of ocelots occurs in tropical environments of Mexico, the range of northern populations extends into the more arid environments of the southwestern United States including remnant populations in Texas and transient populations in Arizona. In its northern range, ocelots occur in subtropical thorn forest, thorn scrub and dense brushy thickets, often in riparian bottomlands where it prefers areas of dense ground cover. The ocelot is more adaptable than the jaguar and may persist in partly cleared forests, dense cover near large towns, second growth woodland and abandoned cultivation that has gone back to shrubland.



Photograph 3-11. Ocelot
(Source: USFWS)

Ocelots are primarily active during twilight hours and at night, spending the day in heavy brush. Their prey consists of small to medium-sized mammals and birds, but may also include reptiles, fish and invertebrates. Decline of this species has historically been attributed to overhunting and habitat loss. However, population decline is now due predominantly to collisions with vehicles, deleterious allelic effects related to inbreeding and habitat loss (USFWS 2010). In April 2012, an ocelot was struck and killed by a vehicle near Globe, Arizona, and in February 2011, an ocelot was photographed in the Huachuca Mountains of southern Arizona (USFWS 2011d).



Copyright © 2011 National Geographic Society, i-cubed



Figure 3-6. Proposed and Alternate Towers within Potential Jaguar Habitat - Nogales Station's AOR

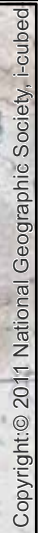


Figure 3-7. Proposed Towers within Potential Jaguar Habitat - Naco Station's AOR

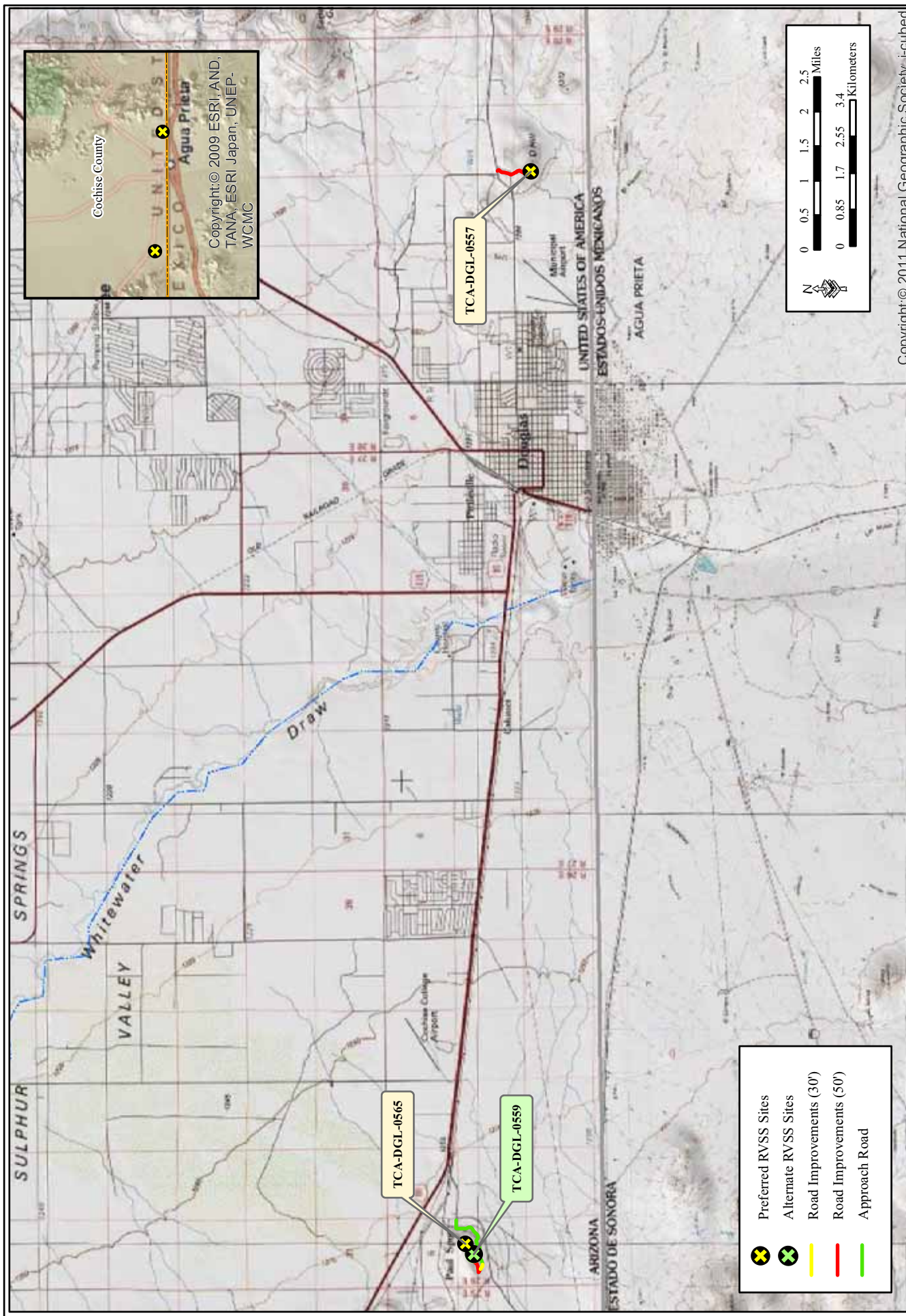


Figure 3-8. Proposed and Alternate Towers near Potential Jaguar Habitat - Douglas Station's AOR

The ocelot historically occurred throughout the project area; however, only three sightings have been recorded in all of Arizona over the last 50 years. Only the sighting occurring at an undisclosed location in Cochise County could have occurred in the project area. Although other sightings have occurred 100 and 25 miles from the project area, the ocelot is a wide ranging species; thus, all of the ocelots sighted in Arizona could potentially move through the project area.

A total of 13 proposed tower sites (TCA-NGL-0503, TCA-NGL-0505, TCA-NGL-0507, TCA-NGL-0509, TCA-NGL-0511, TCA-NGL-0515, TCA-NGL-0555, TCA-NCO-0525, TCA-NCO-529, TCA-NCO-0567, TCA-DGL-0557, TCA-DGL-0559 and TCA-DGL-0565) and their associated roads in Cochise County are located within potential ocelot habitat.

Chiricahua Leopard Frog

The Chiricahua leopard frog is a habitat generalist and historically has been found in a variety of aquatic habitat types in the Salt, Verde, Gila, San Pedro, Santa Cruz, Yaqui/Bavispe, Magdalena, and Little Colorado River basins (Figure 3-9). The species requires permanent or semi-permanent pools for breeding and water characterized by low levels of contaminants and moderate pH and may be excluded or exhibit periodic die-offs where a pathogenic fungus is present. Competition with non-native predators (e.g., American bullfrogs (*Lithobates* [*Rana*] *castesbeiana*), fishes, and crayfish (*Orconectes virilis*)) has restricted the Chiricahua leopard frog to marginal habitats where these competitors are absent. It is currently known from cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,300 to 8,900 feet (USFWS 2007).

The range of the species is split into two disjunct parts - northern populations along the Mogollon Rim in Arizona east into the mountains of west-central New Mexico, and southern populations in southeastern Arizona, southwestern New Mexico, and Mexico. Genetic analysis suggests that the northern populations may be an undescribed, distinct species (USFWS 2007).

The 10 tower sites located in the Nogales, Naco and Douglas stations' AORs are within areas historically occupied by the Chiricahua leopard frog. None of the proposed towers or associated activities are located within potentially occupied breeding habitat. Tower sites TCA-NGL-0507 and -0509 are located near the Alamo-Pena Blanca-Peck Canyons Management Area within the Tumacacori-Atascosa-Pajarito Recovery Unit. This Management Area has been known to support a metapopulation in Peck Canyon and isolated populations in Alamo and Pena Blanca canyons. No Chiricahua leopard frogs were observed in any of the tanks or springs surveyed in Peck, Alamo and Pena Blanca canyons during Arizona Game and Fish Department's (AGFD) frog survey in 2008 and 2009. The Josephine Canyon Hydrologic Unit above 3,800 feet and the portion of Potrero Creek Hydrologic Unit that includes Monument Tank are also included in this Management Area (Figure 3-10). No Chiricahua leopard frogs were documented in Monument Tank during the frog surveys conducted by AGFD in 2008 and 2009. This Management Area is mostly an area of former occupation. Threats in this Management Area are the same as those throughout the Recovery Unit; however, no conservation efforts were identified in this Recovery Unit.

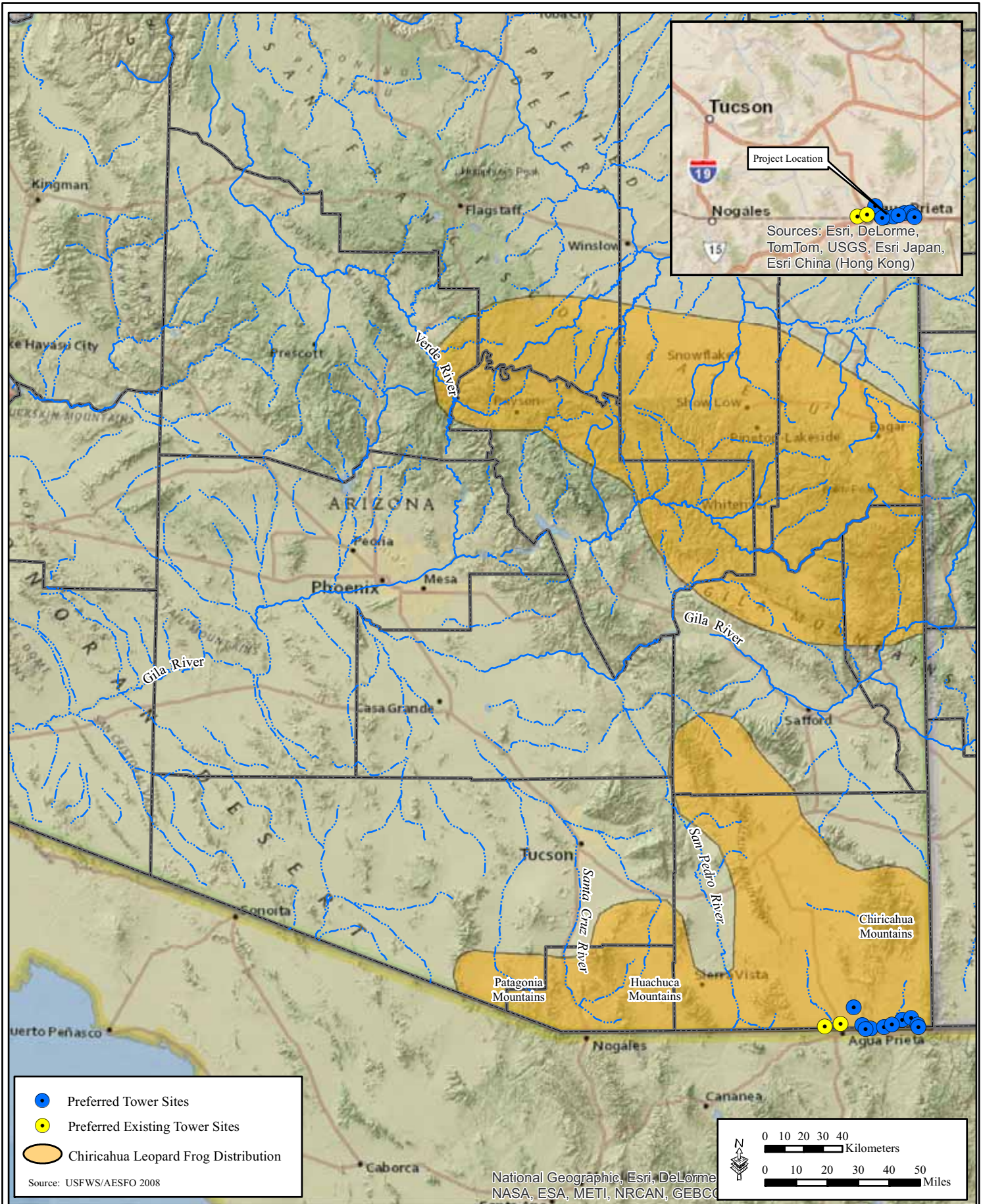


Figure 3-9. General Distribution of the Chiricahua Leopard Frog in Arizona

The access road to TCA-NGL-0507 and -0509 is located within Potrero Canyon from the eastern border of the CNF. The access road to TCA-NGL-0509 is located adjacent to an unnamed tributary within Potrero Canyon. Russell Spring is approximately 1.8 miles upstream of the access road in Potrero Canyon, and Split Tank is located in Potrero Canyon on the east side of the access road near where Potrero Canyon Road and the access road diverge. In 2008 and 2009, AGFD conducted presence/absence surveys for species in the genus *Rana*, including Chiricahua leopard frog, in the Pena Blanca area. None of the tanks or springs surveyed in Potrero, Alamo, Pesquiera or Catabass canyons were occupied by Chiricahua leopard frog at the time of the surveys (see Figure 3-10).

All of the proposed tower sites in the Naco and Douglas stations' AORs are located in the Chiricahua Mountains-Malpai Borderlands-Sierra Madre Recovery Unit. A total of five Management Areas are located within this Recovery Unit. The closest Management Area (Animas Mountains/Playas Valley Management Area) is more than 10 miles east of the nearest tower site (TCA-DGL-0557). The species has declined dramatically in the Arizona and New Mexico portions of the Chiricahua Mountains-Malpai Borderlands-Sierra Madre Recovery Unit, and populations are apparently extirpated from the Sulphur Springs Valley and may be gone from the Chiricahua Mountains. A few populations persist across the San Bernardino Valley and Swisshelm Mountains, Peloncillo Mountains, Animas Valley and Playas Valley.

Sonoran Desert Tortoise

The Sonoran Desert population of the desert tortoise is a medium-sized tortoise (Photograph 3-12) that inhabits Sonoran desertscrub on rocky slopes and adjacent bajadas (Brennen and Holycross 2009). The northeasternmost tortoise records in Arizona occur along the Salt River near Roosevelt Lake in Gila County, although populations here have not been confirmed with recent observations (AGFD 2001). The middle San Pedro River drainage in Cochise County harbors the easternmost substantial tortoise populations. Desert tortoise observations have been confirmed in extreme southeastern Cochise County, but most probably represent released captives (e.g., pets). Tortoises have been found as far southwest as the BMGR, Yuma Proving Ground and the CPNWR (AGFD 2001). The Sonoran population is found within a variety of Sonoran Desertscrub biotic communities but most commonly within paloverde-mixed cacti communities. Tortoises are found in the Arizona Upland and Lower Colorado River subdivision of the Sonoran Desert, desert grassland and ecotonal areas consisting of Sonoran desertscrub (AGFD 2001).



Photograph 3-12. Sonoran Desert Tortoise
(Source: GSRC)

The Sonoran population of the desert tortoise occurs primarily on rocky slopes and bajadas in Sonoran Desertscrub communities. Caliche caves in incised, cut banks of arroyos are also used for shelter sites, especially in the Lower Colorado River Valley subdivision. Adequate shelter is one of the most important habitat features of tortoises in the Sonoran Desert (Averill-Murray and Klug 2000). Tortoises escape extreme temperatures in burrows, which stay cooler in the summer

and warmer in winter than outside temperatures. Tortoises require loose soil in which to excavate shallow burrows below rocks and boulders, but they may also use rock crevices which they may or may not be able to modify. Tortoises occasionally burrow under vegetation; less often they dig soil burrows on more or less open slopes, and also use caliche caves in incised arroyo banks. They will also rest directly under live or dead vegetation without constructing a burrow.

Activity begins in the spring as temperatures warm, and then decreases as the season moves into the summer drought in May and June (Averill-Murray and Klug 2000). Much more time is spent inactive in burrows, where they conserve water and energy. The onset of the summer monsoon season signals the beginning of peak tortoise activity, dramatically rising in early August and peaking during August-September (Averill-Murray and Klug 2000). Activity decreases sharply after mid-October, as tortoises withdraw to winter hibernacula, which are shelters similar to those they use during activity seasons (Averill-Murray and Klug 2000). Even during the winter, some individuals may bask, move or even forage on warm winter days. Females may terminate hibernation as early as late February, while some males may remain inactive through the entire spring.

Sonoran desert tortoises eat a variety of annual and perennial grasses, forbs and succulents. Sonoran tortoise forage includes dicot annuals, grasses, herbaceous perennials, trees and shrubs, subshrubs/woody vines and succulents (ADGF 2001). The most common food items include the woody vine (*Janusia gracilis*) and various mallows (*Malvaceae* spp.) (AGFD 2001).

Although the disturbance footprint of the Proposed Action does not support suitable habitat for this species, the landscape surrounding TCA-AJO-0523 and TCA-AJO-0553 supports potential Sonoran desert tortoise habitat. However, no sign of Sonoran desert tortoise was observed at the proposed tower sites during the biological surveys.

3.7.1.2 State-Listed Species

The ANHP maintains a list of species with special status in Arizona. The ANHP list includes flora and fauna whose occurrence in Arizona is or may be in jeopardy or that have known or perceived threats or population declines (AGFD 2011b). The ANHP list is provided in Appendix E. Similarly, the CDFG Biogeographic Data Branch maintains the California Natural Diversity Database of state-listed endangered and threatened animals (CDFG 2011), and endangered, threatened and rare plants (CDFG 2012) of California. The CDFG list of state-protected species is provided in Appendix E. These species are not necessarily the same as those protected under the ESA.

The project area could be considered suitable habitat for various state-listed species. Specifically, one Arizona state-listed species, the flat-tailed horned lizard (*Phrynosoma macleayi*), has the potential to occur within or near the project area. However, no state-listed species for Yuma, Santa Cruz or Pima counties in Arizona, or Imperial County, California, were observed during the pedestrian surveys.

Flat-tailed Horned Lizard

The flat-tailed horned lizard is a small to medium-sized horned lizard with a snout-to-vent length of 2.3 to 3.2 inches (Photograph 3-13). The flat-tailed horned lizard is found in the lower Colorado River Valley subdivision of the Sonoran Desertscrub and has a very limited distribution in Northern Mexico, Arizona and California (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). This species is known from a variety of habitats; however, in Arizona, it seems to be restricted to sandy and hardpan flats dominated by creosote bush (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). AGFD currently includes the flat-tailed horned lizard on its draft list of wildlife of special concern. This designation affords no legal Federal protection to the species, but is used in planning to encourage habitat conservation and management consideration (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). Collecting or killing flat-tailed horned lizards is prohibited in both Arizona and California, except by special permit (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). The flat-tailed horned lizard is currently afforded protection under the Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). Because BLM and Reclamation are signatories on the Rangewide Management Strategy, any surface-disturbing projects on their lands is subject to the provisions in the Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). YUM-YUS-0539, YUM-YUS-0543, YUM-YUS-0547, YUM-YUS-0549, YUM-YUS-0573, YUM-YUS-0575 and YUM-YUS-0577 are within the range of the flat-tailed horned lizard (Figure 3-11). Two of the tower sites (YUM-YUS-0543 and YUM-YUS-0547) are located in the Yuma Desert Flat-tailed Horned Lizard Management Area. These sites contain suitable flat-tailed horned lizard habitat and are on lands managed by agencies designated as signatories of the flat-tailed horned lizard conservation agreement.



Photograph 3-13. Flat-tailed Horned Lizard
(Source: GSRC)

3.7.2 Environmental Consequences

3.7.2.1 Proposed Action

No verifiable occurrences of any Federally listed species were made within the project area during the biological survey. Consultation with the USFWS under Section 7 of the ESA has been completed. CBP received concurrence from USFWS that the Proposed Action may affect, but would not likely adversely affect Mexican spotted owl, southwestern willow flycatcher, jaguar, lesser long-nosed bat, ocelot and Chiricahua leopard frog. Likewise, the Proposed Action may affect, but is not likely adversely affect, designated Critical Habitat for the Mexican spotted owl. The Proposed Action is not likely to adversely modify proposed Critical Habitat for the southwestern willow flycatcher or affect designated Critical Habitat for the southwestern willow flycatcher or Chiricahua leopard frog. The Proposed Action may affect, would not likely adversely affect Sonoran pronghorn. Concurrence from USFWS has not been received for the Sonoran pronghorn. At CBP's discretion, consultation was not completed for the Sonoran pronghorn since the towers on OPCNM will not be constructed at this time.

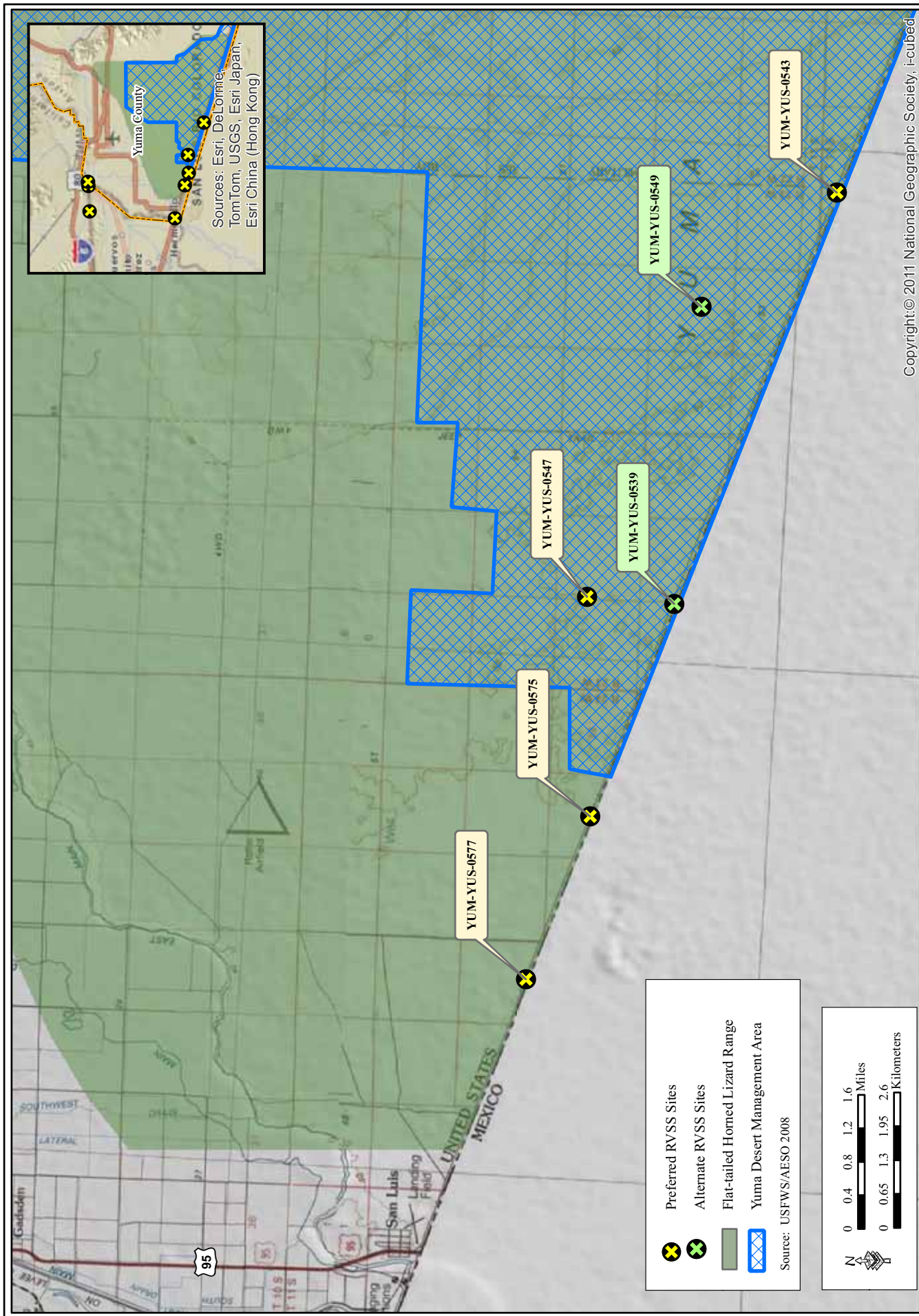


Figure 3-11. Proposed and Alternate Towers in Flat-tailed Horned Lizard Range - Yuma Station's AOR

Southwestern Willow Flycatcher

The Proposed Action may affect, but is not likely to adversely affect, the southwestern willow flycatcher. Although the riparian habitats near the proposed tower sites (YUM-YUS-0533, YUM-YUS-0535 and YUM-YUS-0571) provide important foraging areas during northward and southward migration, the riparian habitats are not suitable for breeding. Noise and light associated with operation and maintenance of proposed tower sites would not exceed ambient levels produced by nearby industrial and residential areas. Noise associated with construction would be minimal and short-term and would have a negligible effect on southwestern willow flycatchers migrating through the Action Area. Lights on the RVSS towers would be utilized twice per day for a period of 5 minutes during each use. Noise, light and human presences are not identified as factors affecting this species during migration (USFWS 2002). Noise and light would affect a very limited extent of this migratory corridor and would be intermittently generated at very low levels (5 foot-candles of illumination or less at 300 yards) and for a very short duration; thus, potential adverse effects would be negligible.

Construction-related noise would be limited to periods of heavy equipment use during soil excavation. Construction and excavation noise would not affect southwestern willow flycatchers if conducted outside the migratory and nesting seasons (February 1 to October 1). BMPs identified in Section 5.0, including pre-construction surveys and consultation with the USFWS, AGFD and CDFG, if necessary, would avoid or minimize short-term adverse effects on southwest willow flycatchers nesting or foraging in the vicinity of the proposed towers.

Proposed tower sites YUM-YUS-0571 and YUM-YUS-0535 are located more than 1,000 feet south of proposed Critical Habitat for the southwestern willow flycatcher; this proposed Critical Habitat will not be adversely modified. The proposed tower sites are located at least 0.25 mile from designated Critical Habitat; thus, the Proposed Action will have no effect on designated Critical Habitat.

Lesser Long-nosed Bat

The Proposed Action may affect, but is not likely to adversely affect, the lesser long-nosed bat. Lesser long-nosed bat forage plants, such as agaves, organ pipe cacti and saguaro cacti, were observed within the project area. Agaves, saguaro cacti and organ pipe cacti would be avoided during construction activities to the extent practicable. If they cannot be avoided, agaves, saguaro cacti and organ pipe cacti would be salvaged and transplanted. Salvage and transplantation would be done in accordance with a restoration plan approved by the land manager and USFWS that includes success criteria and monitoring. Thus, the direct impacts of potential forage habitat degradation would be minor. Because tower and access road construction and maintenance activities would occur during daytime, lesser long-nosed bats foraging near tower or road areas would not be disturbed.

Destruction of and damage to lesser long-nosed bat forage plants and disturbance of potential bat foraging habitat would reduce food available to the lesser long-nosed bat. This would likely adversely affect bats, especially during drought periods when forage availability is already impaired. It is difficult to evaluate the significance of the loss of foraging habitat; however, this loss would be small compared to the large amount of potentially suitable foraging habitat available to the lesser long-nosed bat throughout the project area. Furthermore, if any forage plant will be damaged by tower site construction or road improvements, they will be salvaged

and relocated or replaced outside the project footprint. Although loss of mature individuals greater than 3 feet in height could occur, these plants would be replaced at a ratio of 3:1. A small number of bats could be harmed by collisions with the tower or avoidance of the area due to light and electromagnetic frequency radiation. However, bat collisions with the proposed RVSS towers are unlikely. During 2010 and 2011, CBP conducted bat carcass surveys of 13 existing CBP communications and sensor towers in the Ajo and Tucson stations' AORs in an effort to document bat fatalities associated with CBP towers (GSRC 2011 and 2012). The 13 existing towers were monitored twice per week on consecutive days from June 1 to September 30 during 2010 and 2011. No bat carcasses have been documented during the 2 years of monitoring even though lesser long-nosed bats were documented near the tower sites. The potential for bats to collide with the towers would be unlikely and potential effects would be discountable.

Sonoran Pronghorn

Tower site TCA-AJO-0553 is the only proposed tower site located within the current range of the Sonoran pronghorn. It is highly unlikely Sonoran pronghorn occur near TCA-AJO-0553. Sonoran pronghorn location data from 2001 to 2011 as collected by AGFD does not have a record of Sonoran pronghorn with approximately 3 miles of TCA-AJO-0553. Additionally, TCA-AJO-0553 is located along the United States/Mexico border approximately 595 feet north of Mexico Highway 2. Mexico Highway 2 is a highly traveled roadway and traffic noise from the highway is an existing disturbance on Sonoran pronghorn. Access to the tower site will be via South Puerto Blanco Road and the existing border road within the 60-foot Roosevelt Easement. The Roosevelt Easement is highly disturbed and the existing border road is a heavily traveled by Federal and state agencies. Based on the distance of TCA-AJO-0553 from known pronghorn locations, the proximity to Mexico Highway 2 and the use of existing access routes, the impacts associated with construction or maintenance of TCA-AJO-0553 would be negligible.

Construction activities would result in 0.68 acre of temporary and 0.23 acre of permanent vegetation degradation at TCA-AJO-0553, and 4.7 acres of temporary and 9.1 acres of permanent vegetation degradation associated with approach road improvements. Road improvements would occur on existing roads. Because the proposed tower site has been previously disturbed by past activities, soil disturbance and vegetation removal would have a negligible impact on habitat suitability. Affected habitats are not highly suitable or unique, and similar or better forage and cover opportunities are relatively common in the vicinity of the tower site. The direct effects of construction and road improvements on the surrounding habitats would be further minimized through training of on-site personnel, use of biological monitors to ensure that construction activities remain within the project disturbance footprint and BMPs are properly implemented, implementation of general construction BMPs, preventing the establishment or expansion of non-native, invasive plants, and post-construction monitoring. CBP will provide USFWS and OPCNM with a monitoring report summary that quantifies the total acreage of habitat impacted by the Proposed Action following the completion of project construction.

TCA-AJO-0553 is located on the United States/Mexico border in the extreme southern portion of the current range of the Sonoran pronghorn. Historical telemetry data (2001 – 2011) indicates that Sonoran pronghorn do not disperse into this portion of their range (Figure 3-12). Thus, the potential for Sonoran pronghorn to be present near TCA-AJO-0553 and the Proposed Action to disturb Sonoran pronghorn is discountable. BMPs implemented as part of the project would

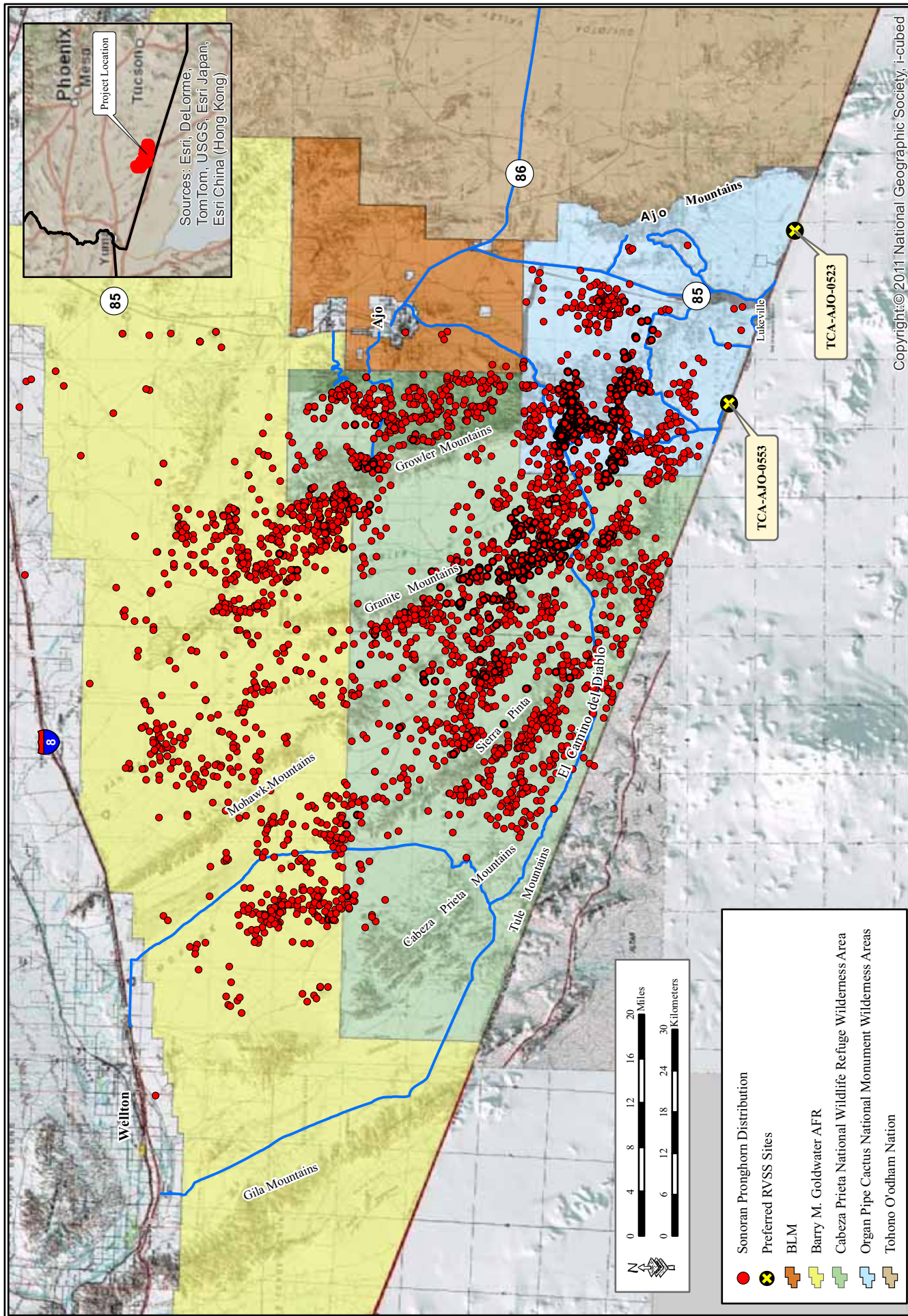


Figure 3-12. Proposed Towers and Historical Sonoran Pronghorn Location Data (1994 - 2011)

further reduce potential impacts on Sonoran pronghorn. A qualified Sonoran pronghorn monitor will be on-site during construction activities at TCA-AJO-0553 and will have the authority to stop construction if a Sonoran pronghorn is observed within 2 miles of scheduled daily activities. Also, all maintenance activities would cease if a Sonoran pronghorn is seen within 1 mile of TCA-AJO-0553 or any approach road to the site. Maintenance crews and personnel in vehicles will wait up to 3 hours from the initial sighting for the animal to move beyond 1 mile. Vehicles may continue at no more than 15 miles per hour once the animal moves beyond 1 mile. If the animal has not moved beyond 1 mile, all personnel will retreat back away from the animal. All pronghorn detections will be reported to USFWS and OPCNM via electronic e-mail with 24 hours of the detection. CBP will also provide weekly Sonoran pronghorn monitoring reports to USFWS and OPCNM. Potential adverse effects of human presence would be avoided through minimizing trips to and from the project site and limiting travel speeds on unpaved roads. Sonoran pronghorn are not typically active at night; thus, lights are not likely to have an adverse effect; however, adverse effects of light during operation would be minimized through use of motion-activated, low-sodium bulbs, and use of night-vision-friendly security lights, if required. Spotlights and generators are not proposed at TCA-AJO-0553; thus, no effect on Sonoran pronghorn would occur from lights or noise. Public access to the OPCNM is restricted from March 15 to July 15; thus, road improvements would not result in increased access for recreationalists and subsequent increased disturbance. Additionally, tower construction will not occur at proposed tower site TCA-AJO-0553 from March 15 to July 15.

Construction of a permanent RVSS will eliminate the need for the mobile surveillance system at tower site TCA-AJO-0553 and thus have a beneficial effect on Sonoran pronghorn by reducing noise and human disturbance. In a typical day the RVSS could preclude six to eight vehicle trips by USBP agents, and therefore result in less human activity, vehicle noise and potential disturbances to Sonoran pronghorn. Power at TCA-AJO-0553 would be supplied by solar panels, thus eliminating the need for a generator. Currently, two vehicle trips per week are required for refueling the MSS. Operation and maintenance of TCA-AJO-0553 is anticipated to require two vehicle trips per month for routine maintenance. A total of six vehicle trips per month associated with refueling will be eliminated by the construction and operation of the permanent RVSS at tower site TCA-AJO-0553. Currently, USBP operations associated with the MSS are not expected to change with operation of the permanent RVSS. USBP currently use the MSS for surveillance and patrolling the same area to be monitored by TCA-AJO-0553.

Due to the location of TCA-AJO-0553 along the border and outside the current distribution pattern of Sonoran pronghorn, the proximity to Mexico Highway 2 and combined with the conservation measures to be implemented as part of the project, the potential effects associated with Proposed Action are negligible.

Jaguar

The Proposed Action may affect, but is not likely to adversely affect, the jaguar. The Proposed Action would result in discountable and negligible adverse effects on the jaguar. Jaguars, if they occur, are likely to be infrequent and transient in the Action Area. Potential effects of the Proposed Action include habitat degradation and increased human presence, noise, and lights.

Degradation of habitats includes 6.8 acres of temporary and 2.3 acres of permanent impacts on vegetation at 10 proposed tower sites, and 11.19 acres of temporary and 37 acres of permanent

impacts on vegetation associated with approach road improvements. Because the proposed tower sites are heavily disturbed, relatively small, located along existing roadways, and primarily located near urban centers, degradation of habitats at the proposed tower sites would have a discountable impact on the suitability of potential jaguar habitat. This minimal degradation would not affect prey abundance or availability, reduce cover opportunities for the jaguar, or otherwise affect jaguar behavior. Direct effects on habitat would be minimized through training of on-site personnel, use of biological monitors to ensure that BMPs are implemented, implementation of general construction BMPs, preventing the establishment or expansion of non-native, invasive plants and post-construction monitoring.

Both short-term construction disturbance and long-term disturbance associated with operation and maintenance of the towers could result in avoidance of the affected areas by jaguars. Given the rarity and elusive nature of the jaguar, the location of disturbance along existing roadways, and the proximity of most proposed tower sites to urban centers, the likelihood of disturbing a jaguar as a result of increased noise, light, and human presence is low. The Proposed Action is not likely to result in a restriction of the jaguar's movements. All of the towers are located near the border, where human activity and presence is frequent. Use of spotlights would be infrequent, would affect a very small area, and would generally occur in response to CBV activity, which would likely have caused any jaguar nearby to disperse from the area prior to activation of the spotlight. In any event, the low intensity and infrequent increase of light and noise caused by the Proposed Action would have a discountable effect on jaguar physiology and behavior. Because the Action Area is already disturbed and frequented by humans, any additional disturbance is not likely to reduce the jaguar's mobility or range. The result is likely to be continued avoidance of areas already being avoided due to proximity to human development and, thus, a discountable reduction in the already expansive area of potentially suitable jaguar habitat. Adverse effects of noise and light would be further minimized through use of mufflers on generators, use of motion-activated, low-sodium bulbs, and use of night-vision-friendly security lights, if required.

Ocelot

The Proposed Action may affect, but is not likely to adversely affect, the ocelot. Effects of the Proposed Action on the ocelot would be similar to those described for the jaguar. Ocelot, if they occur, are likely to be infrequent and transient in the Action Area. Increased noise and lights are not likely to affect the ocelot due to rarity of the animal in the Action Area, availability of unaffected habitats, and the limited behavioral and physiological response to any encounter with proposed activities. If an ocelot were to encounter noise or lights, their response would likely be avoidance and would not have any substantial physiological component.

Mexican Spotted Owl

The Proposed Action may affect, but is not likely to adversely affect, the Mexican spotted owl and its designated Critical Habitat. The Proposed Action would result in negligible degradation of potential foraging and dispersal habitat as a result of tree removal and would not result in permanent avoidance or reduced carrying capacity of these habitats. Removal of less than 10 trees from stringers of trees and riparian vegetation in the project area would not have an appreciable effect on the function of the shade canopy. Operation and maintenance of the proposed towers would occur in habitats that are not suitable for foraging; thus, only dispersing juveniles could potentially be affected, but these effects would be negligible.

Noise, lights and human presence could disturb foraging and dispersing owls during construction, operation and maintenance of tower site and associated road. Although disturbance of foraging or dispersal could result in reduced fitness or avoidance of the area, the duration and intensity of these effects would be minimal and would be attenuated over time. No construction would occur within potentially suitable habitat or during the breeding season; thus, impacts during the breeding season would be avoided. Adverse effects of human presence would be minimized through minimizing trips to and from the project site and limiting travel speeds on unpaved roads. No construction or maintenance would occur at night; however, security lighting and a spotlight would be used during operations. Adverse effects of noise and light during operation would be minimized through use of mufflers on generators, use of motion-activated, low-sodium bulbs, and use of night-vision-friendly security lights, if required. Although lights and noise may disturb a dispersing juvenile if it is close to the proposed tower, such a disturbance is not likely to result in any substantial physiological effect.

Road improvements along the approach road to TCA-NGL-0507 may improve recreational access into potentially suitable habitats and result in adverse effects related to increased human presence. However, the habitats occurring beyond the road improvements are not suitable breeding habitats, but are low-quality dispersal habitats and there are no recreational opportunities, such as trail heads or campgrounds, on the improved road.

The direct effects of construction and road improvements on the surrounding habitats would be further minimized through training of on-site personnel, use of biological monitors, implementation of general construction BMPs, preventing the establishment or expansion of non-native, invasive plants and post-construction monitoring.

Chiricahua Leopard Frog

Tower site TCA-NGL-0509 is located within the Alamo-Pena Blanca-Pecks Canyons Management Area. This Management Area is primarily an area of former occupation and no Chiricahua leopard frogs were observed during surveys conducted by AGFD in 2008 and 2009. A total of 25 tanks or springs was surveyed for frogs in Potrero, Alamo and Pesquiera canyons. USFWS has determined that Chiricahua leopard frog can disperse 1 mile overland, 3 miles up or down an ephemeral drainage and 5 miles up or down a perennial drainage from occupied habitat. The nearest Critical Habitat (Pena Blanca Canyon) is located approximately 5 miles west of TCA-NGL-0509. No ephemeral drainages leading from occupied habitat are located within 1 mile of TCA-NGL-0509. Russell Spring in Potrero Canyon is located within 2 miles of the access road to TCA-NGL-0509 (see Figure 3-10). Split Tank is located approximately 200 feet east of the access road in Potrero Canyon. However, Chiricahua leopard frog was not observed in either tank during AGFD's 2008 and 2009 surveys and are not considered occupied habitat. Based on the AGFD's 2008 and 2009 survey data and the distance of the tower to Critical Habitat, the potential for the Chiricahua leopard frog to occur near proposed tower site TCA-NGL-0509 is highly unlikely. No natural breeding habitats exist downstream of the proposed construction activities. Potential effects from the Proposed Action on the Chiricahua leopard frog would be discountable.

Potential direct effects on Chiricahua leopard frog would be avoided by use of construction monitors at proposed tower site TCA-NGL-0509. The potential for erosion to affect downstream dispersal habitats would be discountable by using biological monitors to ensure that BMPs are

implemented, by minimizing disturbance and by implementing a post-construction erosion monitoring plan. With the implementation of these conservation measures, the Proposed Action may affect, but is not likely to adversely affect, the Chiricahua leopard frog. Any potential effects would be discountable.

Sonoran Desert Tortoise

The Proposed Action would have no effect on the Sonoran Desert population of desert tortoise. Tower sites TCA-AJO-0523 and -0553 do not support suitable habitat for this species, and no sign of Sonoran desert tortoise was observed during surveys. However, the Proposed Action occurs within the species' known distribution, the surrounding landscape supports Sonoran Desertscrub habitat that could be suitable and individuals may wander through the construction footprint. Both TCA-AJO-0523 and -0553 are located within the range of the Sonoran desert tortoise. Vehicle speeds in the range of this species would be restricted to 25 miles per hour (mph); thus, the potential for a Sonoran desert tortoise to be struck by a vehicle is negligible.

Flat-tailed Horned Lizard

The Proposed Action would have a minor impact on flat-tailed horned lizard. YUM-YUS-0573, YUM-YUS-0575 and YUM-YUS-0577 are within the known historic range for the flat-tailed horned lizard, and YUM-YUS-0543 and YUM-YUS-0547 are within the Yuma Desert Management Area for the species (see Figure 3-11). The Yuma Desert Management Area includes approximately 131,000 acres of flat-tailed horned lizard habitat within the western portion of BMGR and adjacent Reclamation lands. With implementation of the Proposed Action, approximately 9 acres of potential flat-tailed horned lizard habitat would be lost at YUM-YUS-0573, YUM-YUS-0575, YUM-YUS-0577, YUM-YUS-0543 and YUM-YUS-0547. Individual flat-tailed horned lizards could be killed as a result of tower and access road construction activities. Towers could also provide hunting perches to raptors, increasing the risk of predation on flat-tailed horned lizards.

However, no flat-tailed horned lizards were observed at any of the tower sites during the biological surveys, and they are highly mobile and are likely to avoid affected areas during construction. Moreover, less than 0.007 percent (approximately 9.15 acres) of the current flat-tailed horned lizard habitat near the project area would be directly lost by construction of the proposed towers. CBP will complete coordination with Reclamation and BLM to ensure compliance with the Flat-tailed Horned Lizard Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003).

3.7.2.2 Alternative 1

Under Alternative 1, impacts on protected species and Critical Habitats would be similar to those discussed under the Proposed Action.

3.7.2.3 No Action Alternative

Under the No Action Alternative, no new RVSS towers would be constructed. No Federally protected or state-protected species, designated or proposed Critical Habitat or potential habitat for protected species would be altered.

3.8 CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES

3.8.1 Affected Environment

The NHPA establishes the Federal government's policy to provide leadership in the preservation of historic properties and to administer Federally owned or controlled historic properties in a spirit of stewardship. The NHPA established the ACHP to advocate full consideration of historic values in Federal decision making; review Federal programs and policies to promote effectiveness, coordination and consistency with National preservation policies; and recommend administrative and legislative improvements for protecting our Nation's heritage with due recognition of other National needs and priorities. In addition, the NHPA also established the SHPO to administer National historic preservation programs on the state level and Tribal Historic Preservation Officer programs on tribal lands, where appropriate. The NHPA also establishes the NRHP. The NRHP is the Nation's official list of cultural resources worthy of preservation and protection. Properties listed in the NRHP include districts, sites, buildings, structures and objects that are significant in United States history, architecture, archaeology, engineering and culture. The NPS administers the NRHP (16 U.S.C. 470).

Section 106 of the NHPA requires CBP/USBP to identify and assess the effects of its actions on cultural resources. CBP must consult with appropriate state and local officials, Native American tribes and members of the public and consider their views and concerns about historic preservation issues when making final project decisions. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the ACHP. Revised regulations, "Protection of Historic Properties" (36 C.F.R. Part 800), became effective January 11, 2001.

3.8.2 Cultural History

Due to the breadth of the project area, regional variations need to be taken into account when discussing cultural chronologies across southern Arizona. Slight differences in date and cultural traditions exist between the western, central and eastern chronologies. As such, the cultural chronologies are broken down by region. Although an expanded cultural history discussion is presented in the cultural resources report for this project (Hart 2012), which is incorporated herein by reference and an abbreviated version is provided below.

Briefly, the cultural history of the western portion of the project area is usually discussed in periods: Paleoindian (circa 12,000 to 10,000 years before present [B.P.]), Archaic (circa 10,000 to 1300 years B.P.), Ceramic (A.D. 700 to 1500), Protohistoric (A.D. 1450 to 1700), Historic (A.D. 1700 to 1912), Statehood (A.D. 1912 to 1945) and Cold War (A.D. 1945 to A.D. 1989). A number of cultural traditions exist within the Ceramic period. These include the Patayan (A.D. 700 to 1850), Trincheras (A.D. 150 to 1450) and Hohokam (A.D. 150 to 1450), which is typically divided into Preclassic (A.D. 150 to 1150) and Classic (A.D. 1150 to 1450) periods.

Differing slightly from the western portion of the project area, the cultural history of the central portion of the project area is usually discussed in periods: Paleoindian (circa 12,000 to 10,000 years B.P.), Archaic (circa 10,000 to 1850 years B.P.), Ceramic (A.D. 150 to 1500), Protohistoric (A.D. 1450 to 1700), Historic (A.D. 1700 to 1912), Statehood (A.D. 1912 to 1945) and Cold War (A.D. 1945 to A.D. 1989). Unlike the western chronology, only one cultural tradition exists

within the Ceramic period. It is the Hohokam (A.D. 150 to 1450), which is typically subdivided into the Preclassic (A.D. 150 to 1150) and Classic (A.D. 1150 to 1450) periods.

The cultural chronology of the eastern portion of the project area varies only slightly from that of the central; basically, there is a slight difference in the onset date of the Paleoindian period, and a Mogollon-Mimbres period is added to the Ceramic period. As such, the cultural history of the eastern portion of the project area is usually discussed in periods: Paleoindian (circa 11,500 to 10,000 years B.P.), Archaic (circa 10,000 to 1850 years B.P.), Ceramic (A.D. 150 to 1500), Protohistoric (A.D. 1450 to 1700), Historic (A.D. 1700 to 1912), Statehood (A.D. 1912 to 1945) and Cold War (A.D. 1945 to A.D. 1989). Two cultural traditions exist within the Ceramic period. These include the Hohokam (A.D. 150 to 1450), which is typically divided into the Preclassic (A.D. 150 to 1150) and Classic (A.D. 1150 to 1450) periods and Mogollon-Mimbres (A.D. 1000 to 1450).

3.8.3 Previous Investigations

The archaeological site records on the Arizona State Museum's (ASM) AZSITE Cultural Resource Inventory and California Historic Resources Information System (CHRIS) database were examined prior to the initiation of the field surveys of the 20 preferred and seven additional alternative RVSS tower locations. In addition, General Land Office plat maps, CNF records, NPS records, BLM records and GSRC's archives were also examined in order to identify potential cultural resources located within the vicinity of the proposed RVSS tower locations. Table 3-12 contains a summary by tower location of previous investigations and recorded sites at each tower location. It should be noted that some towers, due to proximity to one another, may share previous investigations and recorded sites.

Table 3-12. Summary of Previous Research within a 1-mile Radius

Tower Site	Previous Investigations	Recorded Sites
YUM-YUS-0573	21	24
YUM-YUS-0531	21	24
YUM-YUS-0571	21	65
YUM-YUS-0535	5	2
YUM-YUS-0533	6	3
YUM-YUS-0577	5	None
YUM-YUS-0575	3	1
YUM-YUS-0547	None	None
YUM-YUS-0539	None	None
YUM-YUS-0549	None	None
YUM-YUS-0543	None	None
TCA-AJO-0553	1	1
TCA-AJO-0553 access road	3	3
TCA-AJO-0523	1	None
TCA-AJO-0523 access road	3	4
TCA-NGL-0511 access road	13	12
TCA-NGL-0509	5	2

Table 3-12, continued

Tower Site	Previous Investigations	Recorded Sites
TCA-NGL-0507	5	None
TCA-NGL-0505	7	None
TCA-NGL-0503	7	None
TCA-NGL-0555	18	1
TCA-NGL-0515	18	1
TCA-NCO-0529	None	None
TCA-NCO-0529 access road	2	5
TCA-NCO-0525	4	8
TCA-NCO-0567	4	4
TCA-DGL-0559	4	2
TCA-DGL-0565	4	2
TCA-DGL-0557	6	6

Source: Hart 2012

The archaeological surveys previously conducted within 1 mile of the proposed RVSS tower locations were conducted in support of various construction, utility installation, road maintenance and improvements, research and other initiatives. A total of 133 archaeological sites was previously recorded within 1 mile of the proposed RVSS tower locations. These sites include prehistoric and historic artifacts scatters along with Historic period trails, utility corridors and mining and ranching.

3.8.4 Current Investigations

GSRC archaeologists inventoried the project area by inspecting the ground surface of the proposed RVSS tower locations and access and approach roads on September 12 through 15, and December 6 through 9, 2011 (Hart 2012). A 209-foot x 209-foot area was surveyed around the center point of each proposed RVSS tower to cover the permanent footprint and temporary construction easement. Associated access and approach roads were also surveyed as part of this effort. A total of 29 acres of proposed RVSS tower sites and 20 miles of access roads were surveyed as part of this effort. The total area surveyed (towers and roads) was 120 acres.

The cultural resources surveys resulted in the identification of 2 new archaeological sites and 34 isolated occurrences (IOs). AZ EE:9:266(ASM) is a small lithic scatter located along the access road to proposed tower TCA-NGL-511, and includes several possible features. AZ FF:9:187(ASM) is a small historic trash scatter located along the access road to proposed tower site TCA-NCO-567. GSRC recommends that AZ FF:9:187 not be considered eligible for listing on the NRHP since there is no indication of cultural depth to the sites and the survey-level documentation of the site has exhausted the research potential. GSRC initially recommended that AZ FF:9:266(ASM) also not be considered eligible for listing on the NRHP, because it appeared there was little potential for buried deposits. The Arizona SHPO believes that archaeological testing for the presence of subsurface deposits is necessary to determine the NRHP eligibility of the site. However, eligibility testing is not required, provided that AZ EE:9:266(ASM) can be avoided by restricting construction vehicle traffic to the western side of the road, flagging of the site boundary or through archaeological monitoring. If avoidance measures are not feasible, further consultation with the Arizona SHPO is necessary.

3.8.5 Environmental Consequences

3.8.5.1 *Proposed Action*

Of the 133 previously recorded archaeological sites located within a 1-mile radius of the 20 tower locations considered under the Proposed Action, 4 archaeological sites are located within the proposed temporary and permanent construction easements. These include MKR171, which consists of International Boundary Monument Number 171, recorded for the OPCNM near proposed tower TCA-AJO-553. The monument is eligible for the NRHP, but would be avoided as it is located south of the existing vehicle barrier fence. SON C:1:12(ASM) is a small site located along the TCA-AJO-553 approach road, but was not recommended as eligible by the original recorder. No evidence of the site was observed during the pedestrian survey of the proposed road improvements, and the site is presumed destroyed or misplotted.

AZ FF:1:34(ASM) and AZ FF:9:64(ASM) both represent abandoned railroad alignments that are crossed by approach roads to TCA-NCO-0525 and TCA-NCO-0567. AZ FF:1:34(ASM) has been determined eligible by the Arizona SHPO, while AZ FF:9:64(ASM) was recommended as eligible for the NRHP by the original recorder. However, the proposed road improvements would not have an adverse effect on the NRHP eligibility of the sites if construction activities are restricted to the existing road surface. As none of the remaining previously recorded archaeological sites are located within the proposed temporary and permanent construction easements, no impacts on these sites are anticipated due to the implementation of the Proposed Action. No further archaeological work is recommended for these sites.

Section 106 consultation with the Arizona and California SHPO is complete for this project (Appendix A). Based on the archaeological survey, archival research results and Native American Tribal consultation to date (Appendix A), CBP has determined that there would be no effects from the Proposed Action on any NRHP-eligible architectural or aboveground resources, NRHP-eligible archaeological resources, Traditional Cultural Properties or sacred sites. Arizona SHPO concurred with CBP's finding of No Adverse Effect for International Boundary Marker MKR171 and historic railroad segments AZ FF:1:34(ASM) and AZ FF:9:64(ASM), and concurred with CBP's finding of No Historic Properties Affected for site AZ FF:9:187(ASM) and prehistoric site SON C:1:12(ASM). Arizona SHPO concurred with all NRHP eligibility listings, with the exception of site AZ EE:9:266(ASM), and recommended that eligibility testing for the presence of subsurface deposits should be conducted at AZ EE:9:266 (ASM) and results should be evaluated against the frequency and redundancy of similar sites in the area. In addition, Arizona SHPO detailed that site SON C:17(ASM) is an NRHP-listed property located immediately west of a proposed access road and that the area would need to be protected. Adverse effects on these sites would be avoided through flagging, alternative construction alignments or monitoring during construction; however, if avoidance measures are not feasible, further consultation with Arizona SHPO would be required. BMPs to avoid and minimize impacts on undiscovered cultural resources are outlined in Section 5.0.

Beneficial impacts in the form of increased knowledge of the past, including site density and distribution, are realized as a result of surveys conducted as part of this EA. Previously recorded and unidentified cultural resource sites located within the project area and regionally would receive increased protection from disturbance through the deterrence of CBV foot and vehicle traffic moving through surrounding areas. Further, focused enforcement operations resulting

from tower operations would assist in reducing the enforcement footprint and subsequently reduce potential impacts on cultural resources.

3.8.5.2 *Alternative 1*

Under Alternative 1, the same sites previously described under the Proposed Action would be within the area of potential effect. As such, impacts on cultural resources as a result of Alternative 1 would be similar to those described for the Proposed Action. Similar BMPs would also be implemented to avoid and minimize impacts on cultural resources.

3.8.5.3 *No Action Alternative*

The No Action Alternative would have no direct impact, either beneficial or adverse, on cultural resources since construction activities associated with the Proposed Action would not occur. Beneficial indirect impacts in the form of increased knowledge of the past are realized as a result of surveys conducted in support of this EA. However, indirect adverse impacts would occur under the No Action Alternative, and both recorded and unrecorded cultural resources would continue to be impacted by illegal traffic through the area and the required interdiction efforts of CBP such as off-road pursuits.

3.9 AIR QUALITY

3.9.1 Affected Environment

The EPA established NAAQS for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Ambient air quality standards are classified as either "primary" or "secondary." The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), particulate matter less than 10 microns (PM-10), particulate matter less than 2.5 microns (PM-2.5) and lead (Pb). NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare. The NAAQS are included in Table 3-13.

Areas that do not meet these NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 C.F.R. Parts 51 and 93) specifies criteria or requirements for conformity determinations for Federal projects. The Federal Conformity Rule was first promulgated in 1993 by EPA, following the passage of Amendments to the Clean Air Act in 1990. The rule mandates that a conformity analysis must be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more NAAQS.

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the General Conformity Rule. It requires the responsible Federal agency to evaluate the nature of a proposed action and associated air pollutant emissions, and calculate emissions as a result of the proposed action. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to implement appropriate mitigation measures.

Table 3-13. National Ambient Air Quality Standards

	Primary Standards		Secondary Standards	
Pollutant	Level	Averaging Time	Level	Averaging Times
CO	9 ppm (10 mg/m ³)	8-hour ⁽¹⁾	None	
	35 ppm (40 mg/m ³)	1-hour ⁽¹⁾		
Pb	0.15 µg/m ³ ⁽²⁾	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m ³	Quarterly Average	Same as Primary	
NO ₂	53 ppb ⁽³⁾	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour ⁽⁴⁾	None	
PM-10	150 µg/m ³	24-hour ⁽⁵⁾	Same as Primary	
PM-2.5	15.0 µg/m ³	Annual ⁽⁶⁾ (Arithmetic Average)	Same as Primary	
	35 µg/m ³	24-hour ⁽⁷⁾	Same as Primary	
O ₃	0.075 ppm (2008 std)	8-hour ⁽⁸⁾	Same as Primary	
	0.08 ppm (1997 std)	8-hour ⁽⁹⁾	Same as Primary	
	0.12 ppm	1-hour ⁽¹⁰⁾	Same as Primary	
SO ₂	0.03 ppm	Annual (Arithmetic Average)	0.5 ppm	3-hour ⁽¹⁾
	0.14 ppm	24-hour ⁽¹⁾		
	75 ppb ⁽¹¹⁾	1-hour	None	

Source: EPA 2010a at <http://www.epa.gov/air/criteria.html>.

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb - 1 part in 1,000,000,000) by volume, milligrams per cubic meter of air (mg/m³) and micrograms per cubic meter of air (µg/m³).

⁽¹⁾ Not to be exceeded more than once per year.

⁽²⁾ Final rule signed October 15, 2008.

⁽³⁾ The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard

⁽⁴⁾ To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

⁽⁵⁾ Not to be exceeded more than once per year on average over 3 years.

⁽⁶⁾ To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

⁽⁷⁾ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).

⁽⁸⁾ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average O₃ concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008).

⁽⁹⁾ (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average O₃ concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 O₃ standard to the 2008 O₃ standard.

(c) EPA is in the process of reconsidering these standards (set in March 2008).

⁽¹⁰⁾ (a) EPA revoked the 1-hour O₃ standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.

⁽¹¹⁾ (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

The AZDEQ has adopted EPA's NAAQS as the state's criteria pollutants standards, but CARB has adopted their own California Ambient Air Quality Standards (CAAQS). The EPA attainment classifications for Arizona are presented in Table 3-14.

Table 3-14. NAAQS Attainment Status of the Arizona Project Sites

RVSS Site	RVSS Status	County	Attainment Status
YUM-YUS-0577	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0575	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0573	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0571	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0549	Alternate	Yuma	Non-attainment for PM-10
YUM-YUS-0547	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0543	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0539	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0535	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0533	Preferred	Yuma	Non-attainment for PM-10
YUM-YUS-0531	Alternate	Yuma	Non-attainment for PM-10
TCA-AJO-0553	Preferred	Pima	Non-attainment for PM-10
TCA-AJO-0523	Preferred	Pima	Non-attainment for PM-10
TCA-NGL-0555	Preferred	Santa Cruz	Non-attainment for PM-10 and PM-2.5
TCA-NGL-0515	Alternate	Santa Cruz	Non-attainment for PM-10 and PM-2.5
TCA-NGL-0511	Preferred	Santa Cruz	Non-attainment for PM-10 and PM-2.5
TCA-NGL-0509	Preferred	Santa Cruz	Non-attainment for PM-10 and PM-2.5
TCA-NGL-0507	Preferred	Santa Cruz	Non-attainment for PM-10 and PM-2.5
TCA-NGL-0505	Preferred	Santa Cruz	Non-attainment for PM-10 and PM-2.5
TCA-NGL-0503	Alternate	Santa Cruz	Non-attainment for PM-10 and PM-2.5
TCA-NCO-0567	Preferred	Cochise	Non-attainment for PM-10
TCA-NCO-0529	Preferred	Cochise	Non-attainment for PM-10
TCA-NCO-0525	Preferred	Cochise	Non-attainment for PM-10
TCA-DGL-0565	Preferred	Cochise	Non-attainment for PM-10
TCA-DGL-0557	Preferred	Cochise	Non-attainment for PM-10
TCA-DGL-0559	Alternate	Cochise	Non-attainment for PM-10

Source: EPA 2010b

Both the Federal government and the State of California monitor air quality in California. The EPA classifies Imperial County as a moderate non-attainment area for 8-hour O₃, serious non-attainment for PM-10 and moderate non-attainment for PM-2.5 (EPA 2010b). CARB classifies Imperial County as in non-attainment for O₃, PM-2.5 and PM-10 (CARB 2010). Two project sites are located in Imperial County, one preferred site, YUM-YUS-0571, and one alternate site, YUM-YUS-531. Table 3-15 presents a summary of attainment and maintenance status for NAAQS and CAAQS in Imperial County.

Table 3-15. NAAQS and CAAQS Air Quality Status in Imperial County

Pollutant	Federal Designation (NAAQS)	State Designation (CAAQS)
O ₃	Non-attainment (Moderate)	Non-attainment
CO	Attainment	Attainment
PM-10	Non-attainment (Serious)	Non-attainment
PM-2.5	Non-attainment (Moderate)	Non-attainment
NO ₂	Attainment	Attainment
SO ₂	Attainment	Attainment
Pb	Attainment	Attainment
Sulfates	<i>(No Federal standard)</i>	Attainment
Hydrogen Sulfide	<i>(No Federal standard)</i>	Unclassified
Visibility-Reducing Particles	<i>(No Federal standard)</i>	Unclassified

Source: EPA 2010b and CARB 2012

3.9.1.1 Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. They include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), fluorinated gases, including chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HFC) and halons, as well as ground-level O₃ (California Energy Commission 2007).

The major GHG-producing sectors in society include transportation, utilities (e.g., coal and gas power plants), industry/manufacturing, agriculture and residential. End-use sector sources of GHG emissions include transportation (40.7 percent), electricity generation (22.2 percent), industry (20.5 percent), agriculture and forestry (8.3 percent) and other (8.3 percent) (California Energy Commission 2007). The main sources of increased concentrations of GHGs due to human activity include the combustion of fossil fuels and deforestation (CO₂), livestock and rice farming, land use and wetland depletions, landfill emissions (CH₄), refrigeration system and fire suppression system use and manufacturing (CFC) and agricultural activities, including the use of fertilizers (California Energy Commission 2007).

Final Mandatory GHG Inventory Rule

In response to the Consolidation Appropriations Act (House Resolution 2764; P.L. 110–161), EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires large sources that emit 27,557 U.S. tons or more per year of GHG emissions to report GHG emissions in the United States, collect accurate and timely emissions data to inform future policy decisions, and submit annual GHG reports to the EPA. The final rule was signed by the Administrator on September 22, 2009, published on October 30, 2009, and made effective December 29, 2009.

GHG Decision Threshold

CEQ drafted guidelines for determining meaningful GHG decision-making analysis. The CEQ guidance states that if a project would be reasonably anticipated to cause direct emissions of 27,557 U.S. tons or more of CO₂ GHG emissions on an annual basis, agencies should consider this a threshold for decision makers and the public. CEQ proposes this as an indicator of a

minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs (CEQ 2010).

The GHGs covered by EO 13514 are CO₂, CH₄, N₂O, HFC, perfluorocarbons and sulfur hexafluoride. These GHGs have varying heat-trapping abilities and atmospheric lifetimes. CO₂ equivalency (CO₂e) is a measuring methodology used to compare the heat-trapping impact from various GHGs relative to CO₂. Some gases have a greater global warming potential than others. Nitrous oxides (NO_x), for instance, have a global warming potential that is 310 times greater than an equivalent amount of CO₂, and CH₄ is 21 times greater than an equivalent amount of CO₂.

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

Temporary and minor increases in air emissions would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of the towers and access roads. Implementation of the Proposed Action would not violate air quality standards or conflict with state implementation plans; therefore, the Proposed Action would have a negligible impact on air quality. The following paragraphs describe the air calculation methodologies utilized to estimate air emissions produced by the construction of the towers and access roads.

Fugitive dust emissions were calculated using the emission factor of 0.19 ton per acre per month (Midwest Research Institute 1996), which is a more current standard than the 1985 PM-10 emission factor of 1.2 tons per acre-month presented in AP-42 Section 13 Miscellaneous Sources 13.2.3.3 (EPA 2001). Rock blasting will be required to improve the approach road to TCA-DGL-0565; an area approximately 200 feet long will require about 10 feet of widening into the hillside. Emissions from blasting were calculated using emission factors presented in AP-42 Chapter 15.9.

EPA's NONROAD Model (EPA 2005) was used, as recommended by EPA's *Procedures Document for National Emission Inventory, Criteria Air Pollutants, 1985-1999* (EPA 2001), to calculate emissions from construction equipment. Combustion emission calculations were made for standard construction equipment, such as front-end loaders, backhoes, cranes and cement trucks. Assumptions were made regarding the total number of days each piece of equipment would be used, and the number of hours per day each type of equipment would be used.

Construction workers would temporarily increase the combustion emissions in the airshed during their commute to and from the project area. Emissions from delivery trucks would also contribute to the overall air emission budget. Emissions from delivery trucks and construction workers traveling to the job site were calculated using the EPA MOBILE6.2 Model (EPA 2005a, 2005b and 2005c).

Federal and most state agencies segregate airsheds by county boundaries. The project sites are located in four different counties in Arizona and Imperial County in California. The total air quality emissions were calculated for the construction activities for each county to compare to the General Conformity Rule. Summaries of the total emissions for the Proposed Action are presented in Table 3-16 through Table 3-20. Details of the analyses are presented in Appendix F.

Table 3-16. Total Air Emissions (tons/year) from the Proposed Action Construction versus the *de minimis* Threshold Levels-Cochise County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	35.19	100
Volatile Organic Compounds (VOC)	6.60	100
Nitrous Oxides (NO _x)	55.10	100
PM-10	16.81	100
PM-2.5	5.32	100
SO ₂	6.53	100
CO ₂ and CO ₂ equivalents	22,502	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Cochise County is in non-attainment for PM-10 (EPA 2010b).

Table 3-17. Total Air Emissions (tons/year) from the Proposed Action Construction versus the *de minimis* Threshold Levels-Pima County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	10.37	100
VOC	1.61	100
NO _x	10.21	100
PM-10	5.47	100
PM-2.5	1.20	100
SO ₂	1.12	100
CO ₂ and CO ₂ equivalents	4,304	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Pima County is in non-attainment for PM-10 (EPA 2010b).

Table 3-18. Total Air Emissions (tons/year) from the Proposed Action Construction versus the *de minimis* Threshold Levels-Yuma County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	24.93	100
VOC	4.45	100
NO _x	35.80	100
PM-10	5.57	100
PM-2.5	2.88	100
SO ₂	4.27	100
CO ₂ and CO ₂ equivalents	14,716	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Yuma County is in non-attainment for PM-10 (EPA 2010b).

Table 3-19. Total Air Emissions (tons/year) from the Proposed Action Construction versus the *de minimis* Threshold Levels-Santa Cruz County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	21.04	100
VOC	3.55	100
NOx	25.42	100
PM-10	4.78	100
PM-2.5	2.11	100
SO ₂	2.89	100
CO ₂ and CO ₂ equivalents	10,460	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Santa Cruz County is in non-attainment for PM-10 and PM-2.5 (EPA 2010b).

Table 3-20. Total Air Emissions (tons/year) from the Proposed Action Construction versus the *de minimis* Threshold Levels-Imperial County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	6.80	100
VOC	1.23	100
NOx	9.06	100
PM-10	3.29	50
PM-2.5	0.95	100
SO ₂	1.12	100
CO ₂ and CO ₂ equivalents	3,767	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Imperial County is in non-attainment for O₃, PM-10 (serious) and PM-2.5 (EPA 2010b and CARB 2012).

Several sources of air pollutants would contribute to the overall air impacts of the construction project. The air results in Table 3-16 through Table 3-20 included emissions from the following sources.

- Combustion engines of construction equipment
- Construction workers commuting to and from work
- Supply trucks delivering materials to construction site
- Fugitive dust from job-site ground disturbances
- Rock blasting during road widening

Operational Air Emissions

Operational air emissions refer to air emissions that may occur after the towers have been installed, such as maintenance trips and the use of generators operating 4 to 8 hours per day (worst case scenario). The air emissions from generators and monthly maintenance commutes are presented in Appendix F and are summarized in Table 3-21 through Table 3-25.

Table 3-21. Total Air Emissions (tons/year) from Operations of the Proposed Towers versus the *de minimis* Threshold Levels-Cochise County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	6.66	100
VOC	0.44	100
NOx	1.99	100
PM-10	0.01	100
PM-2.5	0.01	100
SO ₂	0.00	100
CO ₂ and CO ₂ equivalents	770.00	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Cochise County is in non-attainment for PM-10 (EPA 2010b).

Table 3-22. Total Air Emissions (tons/year) from Operations of the Proposed Towers versus the *de minimis* Threshold Levels-Pima County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	3.24	100
VOC	0.21	100
NOx	0.97	100
PM-10	0.01	100
PM-2.5	0.01	100
SO ₂	0.00	100
CO ₂ and CO ₂ equivalents	376.00	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Pima is in non-attainment for PM-10 (EPA 2010b).

Table 3-23. Total Air Emissions (tons/year) from the Operations of the Proposed Towers versus the *de minimis* Threshold Levels-Yuma County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	12.87	100
VOC	0.84	100
NOx	3.91	100
PM-10	0.02	100
PM-2.5	0.02	100
SO ₂	0.00	100
CO ₂ and CO ₂ equivalents	1,504.00	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Yuma is in non-attainment for PM-10 (EPA 2010b).

Table 3-24. Total Air Emissions (tons/year) from the Operations of the Proposed Towers versus the *de minimis* Threshold Levels-Santa Cruz County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	6.56	100
VOC	0.43	100
NOx	1.95	100
PM-10	0.01	100
PM-2.5	0.01	100
SO ₂	0.00	100
CO ₂ and CO ₂ equivalents	757.00	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Santa Cruz County is in non-attainment for PM-10 and PM-2.5 (EPA 2010b).

Table 3-25. Total Air Emissions (tons/year) from the Operations of the Proposed Towers versus the *de minimis* Threshold Levels-Imperial County

Pollutant	Total	<i>de minimis</i> Thresholds ¹
CO	3.17	100
VOC	0.20	100
NOx	0.97	100
PM-10	0.01	100
PM-2.5	0.01	100
SO ₂	0.00	100
CO ₂ and CO ₂ equivalents	372.00	27,557

Source: 40 C.F.R. 51.853 and GSRC model projections.

¹ Note that Imperial County is in non-attainment for O₃, PM-10 and PM-2.5 (EPA 2010b and CARB 2012).

As can be seen from the Tables 3-21 through 3-25, the proposed construction and operational activities do not exceed Federal *de minimis* thresholds for NAAQS, CAAQS and GHGs and, thus, would not require a Conformity Determination. BMPs to be incorporated to ensure that fugitive dust and other air quality constituent emission levels do not rise above the minimum threshold as required per 40 C.F.R. 51.853(b)(1) are listed below.

- Dust suppression methods, such as road watering to minimize airborne particulate matter created during construction activities, will be utilized. Standard construction BMPs such as routine watering of the construction site, as well as access and approach roads to the site, will be used to control fugitive dust and thereby assist in limiting potential PM-10 excursions during the construction phase of the proposed project.
- All construction equipment and vehicles will be required to be maintained in good operating condition to minimize exhaust emissions.

3.9.2.2 *Alternative 1*

The impacts on air quality would be similar to but greater than those described in the Proposed Action due to more miles road improvements proposed. As there are no violations of air quality standards and no conflicts with the state implementation plans, the impacts on air quality from the implementation of Alternative 1 would be negligible. BMPs as described for the Proposed Action would be implemented under Alternative 1.

3.9.2.3 *No Action Alternative*

The No Action Alternative would not result in any direct impacts on air quality because there would be no construction activities. However, fugitive dust emissions created by illegal off-road vehicle traffic and resulting law enforcement actions would continue. These fugitive dust emissions would continue to adversely affect the air quality of the region.

3.10 NOISE

3.10.1 Affected Environment

Noise is generally described as unwanted sound, which can be based either on objective effects (i.e., hearing loss, damage to structures) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB. The A-weighted decibel [dBA] is a measure of sound pressure scale adjusted (weighted) to conform with the frequency response of the human ear.

Acceptable noise levels have been established by the U.S. Department of Housing and Urban Development (HUD) for construction activities in residential areas (HUD 1984):

Acceptable (not exceeding 65 dBA) – The noise exposure may be of some concern, but common building construction will make the indoor environment acceptable, and the outdoor environment will be reasonably pleasant for recreation and play.

Normally Unacceptable (above 65 but not greater than 75 dBA) – The noise exposure is more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building construction may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.

Unacceptable (greater than 75 dBA) – The noise exposure at the site is so severe that the construction costs to make the indoor noise environment acceptable may be prohibitive, and the outdoor environment would still be unacceptable.

Residential Homes: All of the proposed and alternate tower sites and associated roads are located on rural, minimally developed land. Three of the preferred tower sites are located near residential neighborhoods: YUM-YUS-0533, YUM-YUS-0535 and TCA-DGL-0557. The closest residential home to YUM-YUS-0533 is 0.46 mile (2,450 feet), the closest to YUM-YUS-0535 is 0.73 mile (3,853 feet), and TCA-DGL-0557 is located approximately 0.45 mile (2,382 feet) from a residential receptor.

National Parks: The OPCNM is considered a sensitive noise receptor. Anthropogenic noises can degrade the natural soundscape and adversely affect humans and wildlife. Natural soundscapes are composed completely of natural sounds without the presence of human-made sounds. The project area is located on lands where noise can adversely affect natural soundscapes. NPS reported natural ambient background noise levels on OPCNM averaged 20 dBA over a 20-day period (NPS 2009).

Two important noise emission thresholds are considered in this noise analysis. Noise emission criteria for construction activities have been published by the Federal Highway Administration (FHWA), which has established a construction noise abatement criterion of 57 dBA for lands, such as National Parks, in which serenity and quiet are of extraordinary significance (23 C.F.R. 722 Table 1). The 57 dBA criterion threshold is used to measure the impacts from short-term noise emissions associated with constructing the proposed towers and access roads. For long-term noise emission, EPA (1978) notes that noise emissions of 55 dB or less are suitable for lands on which quiet is a basis for use. This 55 dBA criteria threshold is used to measure the impacts from noise emissions from long-term noise emissions from operations of the towers. Most of the preferred and alternative tower sites are located a mile or more from National Parks, with the exception of the preferred tower sites TCA-AJO-0523 and TCA-AJO-0553, which are located on OPCNM.

National Forests: Four preferred and two alternate tower sites are located on the CNF. FHWA noise abatement criteria specify different noise levels for different land use categories. For areas where outdoor recreation is of importance (Activity Category B), the noise criterion is 67 dBA (23 C.F.R. 722 Table 1). Table 3-26 presents a list of the preferred and alternate tower sites and the distance to the nearest sensitive noise receptors.

Table 3-26. Preferred and Alternative Tower Sites and Distance to Sensitive Noise Receptors

Tower Site Code	Preferred or Alternate	Nearest Sensitive Noise Receptor	Distance to Nearest Sensitive Noise Receptor	
			Miles	Feet
YUM-YUS-0533	Preferred	Residential	0.46	2,450
YUM-YUS-0543	Preferred	Residential	9.26	48,914
YUM-YUS-0575	Preferred	Residential	3.86	20,374
YUM-YUS-0577	Preferred	Residential	1.84	9,703
YUM-YUS-0535	Preferred	Residential	0.73	3,853
YUM-YUS-0539	Preferred	Residential	6.64	35,043
YUM-YUS-0571	Preferred	Residential	1.74	9,171
YUM-YUS-0573	Preferred	Residential	2.79	14,753
TCA-AJO-0523	Preferred	OPCNM	Located on NPS Lands	
YUM-YUS-0547	Alternate	Residential	7.32	38,672
YUM-YUS-0549	Alternate	Residential	9.05	47,807
YUM-YUS-0531	Alternate	Residential	2.44	12,885
TCA-NGL-0503	Alternate	CNF	Located on USFS Lands	
TCA-NGL-0515	Alternate	CNF	Located on USFS Lands	

Table 3-26, continued

Tower Site Code	Preferred or Alternate	Nearest Sensitive Noise Receptor	Distance to Nearest Sensitive Noise Receptor	
			Miles	Feet
TCA-AJO-0553	Preferred	OPCNM	Located on NPS Lands	
TCA-NGL-0505	Preferred	CNF	Located on USFS Lands	
TCA-NGL-0507	Preferred	CNF	Located on USFS Lands	
TCA-NGL-0509	Preferred	CNF	Located on USFS Lands	
TCA-NGL-0555	Preferred	CNF	Located on USFS Lands	
TCA-NGL-0511	Preferred	Residential	0.64	3,389
TCA-NCO-0525	Preferred	Residential	3.51	18,520
TCA-NCO-0529	Preferred	Residential	1.99	10,532
TCA-NCO-0567	Preferred	Residential	1.25	6,610
TCA-DGL-0557	Preferred	Residential	0.45	2,382
TCA-DGL-0559	Alternate	Residential	2.90	15,333
TCA-DGL-0565	Preferred	Residential	2.88	15,181

Noise Attenuation

As a general rule, noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dB over hard surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet over a hard surface, then the noise level would be 79 dBA at a distance of 100 feet from the noise source, 73 dBA at a distance of 200 feet. Climate conditions, structures, topography, vegetation and soil all affect noise attenuation. To estimate the attenuation of the noise over a given distance (in the absence of these variables) the following relationship is utilized:

$$\text{Equation 1: } dBA_2 = dBA_1 - 20 \log (d_2/d_1)$$

Where:

dBA_2 = dBA at distance 2 from source (predicted)

dBA_1 = dBA at distance 1 from source (measured)

d_2 = Distance to location 2 from the source

d_1 = Distance to location 1 from the source

Source: Caltrans 1998

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

Impacts associated with noise level increases during construction would have a temporary, moderate impact on the environment. Noise levels associated with tower operations would be permanent and negligible to moderate depending on the proposed RVSS tower site location. The construction of the towers and access roads would require the use of common construction equipment. Table 3-27 describes noise emission levels for construction equipment, which range from 79 dBA to 85 dBA at a distance of 50 feet (FHWA 2007 and Thalheimer 2000).

Table 3-27. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances¹

Noise Source	50 feet	100 feet	200 feet	500 feet	1,000 feet
Crane	81	75	69	61	55
Dump truck*	84	78	72	64	58
Excavator	81	75	69	61	55
Front-end loader	79	73	67	59	53
Concrete mixer truck*	85	79	73	65	59
Drill Rig*	85	79	73	65	59
Bulldozer	82	76	70	62	56
Generator	81	75	69	61	55

Source: FHWA 2007 and GSRC

¹The dBA at 50 feet is a measured noise emission (FHWA 2007).

* The reference for the construction equipment marked with an asterisk is from Thalheimer (2000). The 100- to 1,000-foot results are GSRC modeled estimates.

Assuming the worst-case scenario of 85 dBA, the noise model projected that noise levels of 85 dBA from a point source (i.e., concrete mixer truck) would have to travel 500 feet before the noise would attenuate to a noise level of 65 dBA. There are no residential receptors within 500 feet of any of the tower sites or new or improved access roads. Secondly, the 85 dBA noise level would have to travel 1,138 feet before the noise would attenuate to 57 dBA, the criterion for temporary construction activities within National Parks. Construction of towers and improvements to approach roads associated with the preferred TCA-AJO-0523 and TCA-AJO-0553 would impact approximately 541 acres for 7 weeks, after which noise levels would return to ambient levels. The noise impacts from construction activities would be considered moderate; however, they would be temporary.

Rock Blasting

Rock blasting would be required to improve the approach road to TCA-DGL-0565. An area approximately 200 feet in length and 10 feet wide would be blasted to widen the existing road into the hillside. Blasting increases vibrations and low frequency air pressure; thus, these levels usually fall below the sound level that a human ear can detect. The vibration energy would not damage any existing nearby structures because the closest residential or commercial structure is over 2 miles away. BMPs, such as the use of blasting mats, would be implemented to minimize the potential for debris and reduce increases in noise levels. Minimal impacts could occur as a result of the blasting activities due to the temporary nature of the work, use of proper BMPs and distance to sensitive receptors and structures.

Long-term Noise Emissions from Generator

Long-term noise emissions refer to noise emissions that would occur after the new towers have been installed. If used, noise emissions from the generator (25 kilowatts) would produce the major noise signature during ongoing operations. For this noise analysis it was assumed that a propane-fueled generator would be utilized. Noise emissions from propane generators were obtained from manufacturer's specifications and were found to be 66 dBA at 23 feet from the enclosure under standard test conditions (Cummins 2010). It is estimated that the generator noise would travel 81 feet before attenuating to 55 dBA. Approximately 0.47 acre of land would

be encompassed within the 55 dBA noise contour during operation of backup generators. It is anticipated that the generators could operate 4 to 8 hours per day (worst case scenario). Tower sites TCA-AJO-0553 and TCA-AJO-0523 are located on OPCNM. These tower sites would be powered by solar power only (i.e., no backup generator). Thus, there would be no operational noise associated with these two towers. Impacts on the environment from operational noise emissions would be negligible for other tower sites.

3.10.2.2 *Alternative 1*

Noise emissions associated with construction and operational activities would be similar to those described for the Proposed Action. The towers and access roads are located across southern Arizona and southeast California; however, they are not located near residential areas. Under Alternative 1, impacts on the noise environment would be negligible.

3.10.2.3 *No Action Alternative*

Under the No Action Alternative, the sensitive noise receptors and wildlife near the proposed tower sites and associated access roads would not experience construction and tower operational noise events. Noise emissions associated with CBV off-road travel and consequent law enforcement actions would be long-term and minor and would continue under the No Action Alternative.

3.11 UTILITIES AND INFRASTRUCTURE

3.11.1 Affected Environment

3.11.1.1 *Utility Commercial Grid Power*

Several commercial utility power companies service the counties in the project area (Table 3-28).

Table 3-28. Power Company Service Areas

County	Power Company
Imperial County	Imperial Irrigation District
Yuma County	Arizona Public Service (APS)
Pima County	Tucson Electric Power and San Carlos Irrigation
Santa Cruz County	Sulphur Springs Valley Electric Cooperative, Inc.
Cochise County	Sulphur Springs Valley Electric Cooperative, Inc.

Sources: CalEnergy 2012; APS 2011; and Arizona's Touchstone Energy Cooperatives 2011

Each RVSS tower would be powered by commercial grid power and/or dual power system, except the two towers on OPCNM, which would be powered by solar panels only. Tower sites not on commercial grid power would be designed for a 50-amp load. Towers would use an alternative power source (solar panels, hydrogen fuel cells and/or propane generator) for a minimum of 2 months until grid power can be provided, where applicable.

Commercial Grid Power

If commercial power is utilized, the grid power design would be site-specific; however, commercial grid power would be overhead leading up to the permanent disturbed area and then underground where it enters the 50-foot x 50-foot fenced tower site. The installation of overhead or buried lines at the RVSS tower sites would be placed within surveyed road

construction buffer areas, to the extent possible, all of which would be verified to identify potential impacts on biological and cultural resources along access roads.

Ambient and Artificial Lighting

Ambient or atmospheric light is of concern to many, including, most notably, astronomical observatories (International Dark Sky Association 2008). The reduction of man-made or artificial light sources is generally what astronomers would like to see in the southwest and there are light ordinances in place in some cities and counties in the southwest to minimize sky brightness in large population centers. Several of the counties within the project area have adopted County Light Pollution codes or ordinances. The general purpose of these codes is to preserve the dark night sky for astronomers and for the general public, while achieving safe, efficient lighting practices.

When tower facility lighting is deemed necessary due to CBP operational needs, such as the installation of infrared lighting, USFWS (2000) *Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers* would be implemented to reduce nighttime atmospheric lighting and the potential adverse effects of nighttime lighting on migratory birds, nocturnal flying species and astronomical observatories. If required, infrared lighting installed on the proposed towers would be compatible with night-vision goggle usage. Tower spotlights are proposed for use during tower operations; however, these spotlights would be used to illuminate items of interest at the ground level for approximately 5 minutes twice a night. The limited use frequency and duration and the controlled directional movement of the beam would limit light pollution into the night sky.

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

The Proposed Action would have a long-term, negligible effect on utilities and infrastructure. CBP would coordinate with the Imperial Irrigation District, APS, Tucson Electric Power, San Carlos Irrigation and Sulphur Springs Valley Electric Cooperative, Inc. to ensure that no adverse effects on the local commercial power grid would occur. These service providers would be responsible for constructing commercial grid infrastructure and providing power to each of the tower sites proposed for commercial grid power.

CBP would ensure that all lighting would be shielded to minimize ambient lighting issues and would follow all County Light Pollution codes and ordinances, to the greatest extent practicable. Based on these measures, negligible to minor long-term adverse impacts on the night sky and ambient lighting would occur as a result of the implementation of the Proposed Action.

3.11.2.2 Alternative 1

Under Alternative 1, impacts would be the same as those described for the Proposed Action.

3.11.2.3 No Action Alternative

Under the No Action Alternative, the proposed RVSS towers and roads would not be constructed. There would be no impacts on local utilities because no additional power demands associated with the RVSS towers would occur.

3.12 RADIO FREQUENCY ENVIRONMENT

3.12.1 Affected Environment

The RF environment refers to the presence of electromagnetic (EM) radiation emitted by radio waves and microwaves on the human and biological environment. EM radiations are self-propagating waves of electric and magnetic energy that move through space via radio waves and microwaves emitted by transmitting antennas. RF is a frequency or rate of oscillation within the range of about 3 hertz and 300 gigahertz. This range corresponds to frequency of alternating current and electrical signals used to produce and detect radio waves. The EM radiation produced by radio waves and microwaves carry energy and momentum and can interact with matter. All transmit frequencies would require NTIA analysis and approval to ensure that they are allocated for Federal use.

The Federal Communications Commission (FCC) is responsible for licensing frequencies and ensuring that the approved uses would not interfere with television or radio broadcasts or substantially affect the natural or human environment. The FCC adopted recognized safety guidelines for evaluating RF exposure in the mid-1980s (Office of Engineering and Technology [OET] 1999). Specifically, in 1985, the FCC adopted the 1982 American National Standards Institute (ANSI) guidelines to evaluate exposure due to RF transmitters that are licensed and authorized by the FCC (OET 1999). In 1992, ANSI adopted the 1991 Institute of Electrical and Electronics Engineers (IEEE) standard as an American National Standard (a revision of its 1982 standard) and designated it as ANSI/IEEE C95.1-1992 (OET 1999). The FCC proposed to update its rules and adopt the new ANSI/IEEE guidelines in 1993, and in 1996 the FCC adopted a modified version of the original proposal.

In addition to ANSI/IEEE standards, the FCC's guidelines are also based on the National Council of Radiation Protection and Measurements exposure guidelines. The National Council of Radiation Protection and Measurements and ANSI/IEEE exposure criteria identify the same threshold levels at which harmful biological effects may occur. The whole-body human absorption of RF energy varies with the frequency of the RF signal. The most restrictive limits on exposure are in the frequency range of 30 to 300 megahertz where the human body absorbs RF energy most efficiently when exposed in the air field of an RF transmitting source (ANSI/IEEE C95.1-1992).

There are two tiers of exposure limits; occupational or "controlled" and general or "uncontrolled." Operational exposure is when people are exposed to RF fields as a part of their employment and they have been made fully aware of the potential exposure and can exercise control over their exposure. Uncontrolled exposure is when the general public is exposed or when persons employed are not made fully aware of the potential for exposure or cannot exercise control over their exposure.

In order for a transmitting facility or operation to be out of compliance with the FCC's RF guidelines in an area where levels exceed Maximum Permissible Exposure (MPE) limits, it must first be accessible to the public. The MPE limits indicate levels above which people may not be safely exposed regardless of the location where those levels occur.

Adverse biological effects associated with RF energy are typically related to the heating of tissue by RF energy. This is typically referred to as a "thermal" effect, where the EM radiation emitted by an RF antenna passes through and rapidly heats biological tissue. The Health Physics Society indicates that numerous studies have shown that environmental levels of RF energy routinely encountered by the general public are typically far below levels necessary to produce significant heating and increased body temperature and is generally only associated with workplace environments near high-powered RF sources used for molding plastics or processing food products. In such cases, exposure of human beings to RF energy could be exceeded, thus requiring restrictive measures or actions to ensure their safety (Kelly 2007).

Other non-thermal adverse effects, such as disorientation of passing birds by RF waves, are also of concern. Past studies on effects of communication towers were noted by Beason (1999) during the 1999 Workshop on Avian Mortality at Communication Towers (Evans and Manville 2000). During this workshop, Beason (1999) noted that most research on RF signals produced by communication towers have no general disorientation effects on migratory birds. However, more research is needed to better understand the effects of RF energy on the avian brain.

Currently, CBP, USFWS, NPS, U.S. Air Force, U.S. Marine Corps, BLM and local law enforcement agencies use 2-way radios as part of their daily operations in the project region. Further, several of these agencies operate and maintain radio repeaters within the project region.

3.12.2 Environmental Consequences

3.12.2.1 Proposed Action

The RF environment created by the installation, operation and maintenance of the communication systems on the proposed towers would have a long-term, negligible adverse impact on human safety and the natural environment. Any adverse effects on human safety and wildlife would likely be negligible due to the minimal exposure limits associated with both the type of equipment used and the elevated locations in which they would be positioned on the towers. The tower sites would also be fenced for security, making human and terrestrial wildlife exposure to RF emitting equipment even less likely.

Furthermore, communication systems on the proposed towers would be installed a minimum of 20 feet off the ground and would exceed the minimum safe operating distance for these systems (i.e., 17 feet). Thus, maintenance and operational personnel working within the secure tower site would not be exposed to any RF energy that exceeds MPE limits set by the FCC. All OSHA guidelines regarding RF exposure will also be followed during tower and equipment maintenance.

Though greater research is required to have a better understanding of the effects of RF energy on the avian brain, the potential effects on passing birds is expected to be negligible as well. Any disorientating effect, if experienced, would be temporary and would occur only at close distances to the antennas.

As part of the overall spectrum management process, NTIA and the FCC have developed radio regulations to help ensure that the various radio services operate compatibly in the same environment without unacceptable levels of RF interference and emissions. While the communication systems and the frequencies in which they would be operated are considered law

enforcement sensitive and cannot be provided to the public, compliance with FCC and NTIA regulations would be required, and would ensure that recognized safety guidelines are not exceeded. All frequencies used by CBP would be coordinated through the FCC and NTIA as required by NTIA regulations.

3.12.2.2 *Alternative 1*

Under Alternative 1, impacts on the RF environment would be similar to those discussed under the Proposed Action.

3.12.2.3 *No Action Alternative*

Under the No Action Alternative, the proposed tower sites would not be installed or operated. Daily radio operations by CBP, USFWS, NPS, local law enforcement, and the military would continue within the project region. There would be no impacts on the existing RF environment or effects on the human or natural environment.

3.13 ROADWAYS AND TRAFFIC

3.13.1 Affected Environment

The Yuma tower sites are located in Yuma County, Arizona, and Imperial County, California. The main transportation route in this area is Interstate 8. Interstate 8 is a 4-lane, conventional highway that generally runs parallel with the United States/Mexico border. Other main transportation arteries include U.S. Highway 95, which connects the towns of Yuma and San Luis, and California Highway 186, a conventional, 2-lane highway, which provides access from Interstate 8 to the Andrade POE.

The average annual daily traffic count (AADT) at the Interstate 8/U.S. Highway 95 interchange is approximately 20,500 vehicles (Arizona Department of Transportation [ADOT] 2009). The AADT at the Interstate 8/California Highway 186 interchange is 21,000 vehicles (Caltrans 2010).

The Ajo proposed tower sites are located on OPCNM lands in western Pima County. The project area is extremely remote and the only highway within the project area is State Route (SR) 85, which extends from Interstate 10 near Buckeye south to the POE at Lukeville. It is a major transportation route for United States citizens traveling to Rocky Point, Sonora, Mexico, and is the only paved access to OPCNM. Traffic flow is usually low on these roads because most vehicular movement in the region occurs on the interstates. The AADT of SR 85 from Puerto Blanco Road to the Lukeville POE is 1,400 vehicles (ADOT 2009).

Interstate 19 connects Nogales and Tucson, and SR 82 links Nogales to Patagonia, Sonoita and Cochise County to the east. The southbound AADT at the Interstate 19/SR 82 interchange, just to the east of the proposed tower sites, is 7,800 vehicles (ADOT 2009).

SR 80, SR 92 and Naco Highway are the main vehicular access routes through the Naco project area. SR 92 runs roughly in an "L"-shaped pattern. It begins at SR 90 in Sierra Vista and ends at a traffic circle in Bisbee along SR 80, running entirely within Cochise County. In the vicinity of the Naco proposed towers, the AADT of SR 80 near the SR 92 interchange is 6,000 vehicles (ADOT 2009).

SR 80 is the main route for vehicular access through the Douglas project area. The AADT of SR 80 east of Douglas in the vicinity of TCA-DGL-0557 is approximately 350 vehicles per day (ADOT 2009). Near TCA-DGL-0559 and TCA-DGL-0565, the annual ADT along SR 80 is approximately 4,600 vehicles per day (ADOT 2009).

There are also numerous existing unimproved access roads and border roads that cross the project area throughout Yuma, Pima, Santa Cruz and Cochise counties in Arizona and in Imperial County, California. Most of the approach roads to the proposed RVSS tower sites are gravel or dirt roads.

3.13.2 Environmental Consequences

3.13.2.1 *Proposed Action*

With the implementation of the Proposed Action, construction and staging for the towers and access roads would have a temporary, minor impact on roadways and traffic within the project region. The increase of vehicular traffic would occur for the delivery of supply materials and work crews traveling to each tower site for a short amount of time. The total time for all phases of construction, including inspection and operational testing of equipment, for each proposed RVSS tower site is expected to be approximately 60 days. The installation of the suite of day/night cameras would require approximately 2 to 5 days per RVSS tower site. The initial construction phase would include creation of a staging area for materials and equipment. Once a staging area is established, traffic near the construction site would be from the influx of construction workers and new materials. Staging areas would be located at the proposed RVSS tower sites and would not disrupt the flow of traffic.

Existing roads (19.2 miles) would be used to access the tower sites for construction, operation and maintenance and would be maintained. Because the public already has access to the existing roads, improvement of 19.2 miles of roads would have a long-term, minor effect on public access. However, authorized road improvements would potentially increase recreational use on CNF lands. In addition, an Encroachment Permit would be obtained from Caltrans for any work within California State Highway right-of-way. Once construction work is completed, maintenance visits to each site would be required. Currently, it is anticipated that one maintenance trip per month would be required at each of the proposed RVSS towers. These visits would have a long-term, negligible effect on traffic. However, the Proposed Action could potentially decrease CBV and resulting required law enforcement traffic on public roads.

3.13.2.2 *Alternative 1*

Under Alternative 1, permanent and temporary impacts on roadways and traffic would be similar to those described for the Proposed Action.

3.13.2.3 *No Action Alternative*

Under the No Action Alternative, the proposed tower sites would not be used. Construction of towers and access roads would not occur. There would be no impacts on local vehicular traffic because no construction equipment, materials or construction crews would be needed in the area.

3.14 AESTHETIC AND VISUAL RESOURCES

3.14.1 Affected Environment

Aesthetic and visual resources consist of the natural and man-made landscape features indigenous to the area that give a particular environment its visual characteristics. The rural character of the Yuma project area is valued by its residents and is largely defined by the vast open vistas created by agricultural development. The area surrounding the proposed RVSS tower sites is predominantly used for agriculture and contributes to the open spaces and semi-rural character of the project area.

Towers currently exist within Ajo Station's AOR and are generally commercial, General Services Administration or CBP communication and sensor towers. However, there is no development adjacent to the proposed Ajo RVSS tower sites, except near the Lukeville POE and OPCNM administrative facilities. Aesthetic resources vary throughout the project area, which includes vast open areas of arid desert land, lava flows and areas of unique native vegetation. Areas within the project area visited for their natural setting and aesthetic values include OPCNM and its associated wilderness.

The current visual characteristics of the Nogales tower sites are mostly open areas with steep rolling hills and deep dissecting valleys covered by the natural vegetation of the region. All proposed towers within Nogales Station's AOR, with the exception of one tower, are located on hilltops in the CNF. CNF includes an area of about 1.78 million acres spread throughout mountain ranges in southeastern Arizona and southwestern New Mexico. It is located in parts of Cochise, Graham, Santa Cruz, Pima and Pinal counties in Arizona.

The proposed RVSS tower sites in Naco Station's AOR are located within portions of the Sulphur Springs Valley and the San Pedro Valley, between the Perilla and Huachuca mountains in Cochise County. Several unique and pristine areas exist within the project area and contribute to the overall beauty of the southern desert region. The Coronado National Memorial and CNF are located west of the Naco Station's towers.

The proposed RVSS tower sites in Douglas Station's AOR are located in a portion of Cochise County known as the San Bernardino Valley. The San Bernardino Valley is a sparsely populated, scenic area along the border between Arizona and Sonora, Mexico. Few roads cross the region. Some previously roadless areas of the landscape along the United States/Mexico border now contain CBP tactical infrastructure, but the landscape looks generally as it did 100 years ago, and it is still dominated by native vegetation. The aesthetic resources within Cochise County in the vicinity of the project area include the characteristic open grasslands and natural desertscrub vegetation of the Chihuahuan Desert Biome (Brown 1994). The low diversity and simple appearance of Chihuahuan Desert vegetation held within the relatively flat valley creates a landscape that changes little in appearance from horizon to horizon. Distant mountain views exist in all cardinal directions from the majority of the tower sites. Isolated, rural, agricultural communities contribute to the aesthetic quality of the region.

BLM assigns visual resource inventory classes to managed lands. BLM also subdivides landscapes into three distance zones based on relative visibility from observation points. The three zones are: foreground-middleground, background and seldom-seen. The foreground-

middleground zone includes areas seen from highways, rivers or other viewing locations that are less than 3 to 5 miles away and where management activities might be viewed in detail. This zone is more visible to the public and changes are more noticeable. The background zone includes areas beyond the foreground-middleground zone but usually less than 15 miles away. This does not include areas in the background which are so far distant that the only thing discernible is the form or outline. Areas that are not visible within the foreground-middleground zone or background zone are in the seldom-seen zone (BLM 2009). The BLM visual zones were used as means to quantify the visual impacts of each RVSS tower analyzed in this EA.

3.14.2 Environmental Consequences

3.14.2.1 *Proposed Action*

The Proposed Action would have a long-term, moderate impact on aesthetic qualities within the project region. Depending on the location and elevation of a viewer, most RVSS towers could be visible from 3 to 5 miles away and some towers may be visible from up to 15 miles. As such, the visual impact of the RVSS would be readily apparent in the region. Likewise, many of the towers would be visible from the main vehicular access routes through the project region. However, the impacts on the region's aesthetic quality from the towers would be negligible beyond an observation point of 15 miles because the towers would be within the seldom-seen zone and would not be visibly apparent.

Temporary aesthetic impacts during the construction phase of the project would occur at the RVSS tower sites, and these impacts would include the visual impacts of construction equipment. Temporarily disturbed areas would be revegetated with native plant species or seeds, landscaped or allowed to revegetate naturally following construction.

3.14.2.2 *Alternative 1*

Alternative 1 would result in aesthetic impacts similar to those described for the Proposed Action.

3.14.2.3 *No Action Alternative*

Under the No Action Alternative, no RVSS tower or road construction would occur. The visual resources of the project area would remain unaffected.

3.15 HAZARDOUS MATERIALS

3.15.1 Affected Environment

Several Federal agencies regulate hazardous material and substances in consumer, commercial and industrial chemical products through key regulations that identify individual hazardous substances or the product into which its ingredients are placed. Hazardous waste in Arizona is regulated under the Resource Conservation and Recovery Act and Arizona statutes and codes that are modeled on Federal law. ADEQ has the authority to monitor and direct businesses that may generate, transport or dispose of hazardous waste in Arizona and the ADEQ Waste Programs Division implements state and Federal hazardous waste laws pursuant to delegation from the EPA (ADEQ 2012). In California, hazardous waste is managed by the California Department of Toxic Substance Control.

A Transaction Screen Site Assessment was conducted for each preferred RVSS tower site in accordance with the American Society for Testing and Materials International standard E1528-06. These assessments were performed to evaluate any potential environmental risk associated with the lease by CBP of the property for construction and operation of the RVSS tower at each preferred tower site. Each assessment included a search of Federal and state records of known hazardous waste sites, potential hazardous waste sites and remedial activities, and included sites that are either on the National Priorities List or being considered for the list. No evidence of hazardous materials or recognized environmental conditions was detected at any of the proposed RVSS sites during the site inspections conducted on September 12, 13, 14, and 15, 2011; December 6, 7, 8, and 9, 2011; and March 5, 6, and 7, 2012; or during the review of state and Federal records and interviews with landowners/land managers.

3.15.2 Environmental Consequences

3.15.2.1 *Proposed Action*

Any hazardous and regulated wastes or hazardous substances generated during the construction of the proposed RVSS towers, and construction/improvement of access and approach roads, would be collected, characterized, labeled, stored, transported and disposed of in accordance with all Federal, state and local regulations. These hazardous and regulated wastes generated during implementation of the Proposed Action would also follow proper waste manifesting procedures and would be handled according to contractor-provided materials safety data sheets to protect human health and the environment. BMPs would be implemented to minimize the risk from hazardous materials during construction.

As one of the proposed RVSS towers (YUM-YUS-0571) is located on Quechan tribal lands, CBP would coordinate with the tribal government's environmental office. Standard construction procedures and BMPs, as indicated in Section 5.0, would be implemented such that any hazardous and regulated materials and substances utilized or generated through the implementation of the Proposed Action would not impact the public, groundwater or the general environment.

3.15.2.2 *Alternative 1*

Under Alternative 1, impacts would be the same as those described for the Proposed Action.

3.15.2.3 *No Action Alternative*

Under the No Action Alternative, no RVSS towers would be constructed. Therefore, no impacts on hazardous substances or waste would be expected.

3.16 SOCIOECONOMICS

3.16.1 Affected Environment

This section outlines the basic attributes of population and economic activity within Cochise, Pima, Santa Cruz and Yuma counties, Arizona.

Population and Demographics

Population and growth rates for the region are shown in Table 3-29. Of the study area counties, Pima (Tucson area) is by far the most populous with almost a million people. Santa Cruz is the least populous with approximately 47,000 (2010 Census). From 2000 to 2010, counties in the

ROI grew from 11.5 percent (Cochise County) to 23.6 percent (Santa Cruz County), which was faster than the National growth rate of 9.7 percent, but below Arizona's growth rate of 24.6 percent.

Table 3-29. Population

	2010	2000	Growth Rate
Cochise County, AZ	131,346	117,755	11.5%
Pima County, AZ	980,263	843,746	16.2%
Santa Cruz County, AZ	47,420	38,381	23.6%
Yuma County, AZ	195,751	160,026	22.3%
Imperial County, CA	174,528	142,361	22.6%
Arizona	6,392,017	5,130,632	24.6%
California	37,253,956	33,871,648	10.0%
United States	308,745,538	281,421,906	9.7%

Source: U.S. Census Bureau 2000 and 2010a

Data on race and ethnicity are presented in Table 3-30. Populations of Cochise and Pima counties are similar to the race/ethnicity makeup of Arizona. Santa Cruz and Yuma counties in Arizona and Imperial County, California, are different, with 83, 60 and 80 percent Hispanic, respectively, which is very high compared to the 30 percent Hispanic population in the State of Arizona, 38 percent Hispanic in California and 16 percent Hispanic population for the Nation. African American, American Indian/Alaska Native and Asian populations make up relatively small percentages of the population for all the study area counties.

Table 3-30. Race and Ethnicity

County	White, Not Hispanic or Latino	Hispanic	Black or African American	American Indian and Alaska Native	Asian
Cochise County, AZ	59%	32%	5%	2%	3%
Pima County, AZ	55%	35%	5%	4%	4%
Santa Cruz County, AZ	16%	83%	1%	1%	1%
Yuma County, AZ	35%	60%	3%	2%	2%
Imperial County, CA	14%	80%	4%	2%	2%
Arizona	58%	30%	5%	6%	4%
California	40%	38%	7%	2%	15%
United States	64%	16%	14%	2%	6%

Source: U.S. Census Bureau 2010a

Income and Poverty

Poverty and income data are shown in Table 3-31. The poverty rate for each of the 5 counties is above that of Arizona, California and the Nation, with Santa Cruz, Yuma, and Imperial counties having poverty rates above 20 percent at 25.2, 20.9 and 21.4 percent, respectively. Per capita income for each of the counties is below the United States average, with per capita incomes for Santa Cruz, Yuma, and Imperial counties well below the United States average at about 66, 64 and 71 percent, respectively. Median household incomes are also below the United States average.

Table 3-31. Income and Poverty

County	Per Capita Income 2009	Per Capita Income as a Percent of U.S. 2009	Median Household Income (2006-2010)	Percent Below Poverty Level (2006-2010)
Cochise County, AZ	\$34,243	86.4	\$44,876	15.7
Pima County, AZ	\$33,833	85.4	\$45,521	16.4
Santa Cruz County, AZ	\$25,987	65.6	\$36,519	25.2
Yuma County, AZ	\$25,356	64.0	\$40,340	20.9
Imperial County, CA	\$27,417	70.6	\$38,685	21.4
Arizona	\$33,957	83.8	\$50,448	15.3
California	\$41,301	106.3	\$60,883	13.7
United States	\$38,846	100	\$51,914	13.8

Sources: Bureau of Economic Analysis 2010 and American Community Survey (ACS) 2010

Housing

Housing data are shown in Table 3-32. The homeowner vacancy rate in the five counties and Arizona is above the homeowner vacancy rate for the Nation as a whole. Imperial County and the State of California have a substantially lower percentage of the owner-occupied housing units, and thus higher percentages of renter-occupied housing units, than the Arizona counties, the State of Arizona and the Nation (USCB 2010).

Table 3-32. Housing Units

Geographic Area	Total Housing Units	Occupied			Homeowner Vacancy Rate*	Rental Vacancy Rate**	Vacant Units for Rent
		Units	Percent Owner Occupied	Percent Renter Occupied			
Cochise County, AZ	59,041	50,865	68.2	31.8	3.2%	10.6%	1,917
Pima County, AZ	440,909	388,660	64.1	35.9	2.9%	11.2%	17,708
Santa Cruz County, AZ	18,010	15,437	67.6	32.4	3.5%	11.5%	654
Yuma County, AZ	87,850	64,767	69.2	30.8	2.7%	11.3%	2,583

Table 3-32, continued

Geographic Area	Total Housing Units	Occupied			Homeowner Vacancy Rate*	Rental Vacancy Rate**	Vacant Units for Rent
		Units	Percent Owner Occupied	Percent Renter Occupied			
Imperial County, CA	56,067	49,126	55.9	44.1	3.5%	7.5%	1,762
Arizona	2,844,526	2,380,990	66.0	34.0	3.9%	12.9%	120,490
California	13,680,081	12,577,498	55.9	44.1	2.1%	6.3%	374,610
United States	131,704,730	116,716,292	65.1	34.9	2.4%	9.2%	4,137,567

Source: U.S. Census Bureau 2010b

*Homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale."

** Rental vacancy rate is the proportion of the rental inventory that is vacant "for rent."

Employment

Employment by industry sector data are presented in Table 3-33. Retail trade makes up a much larger percentage of employment in Cochise, Santa Cruz, Yuma and Imperial counties than for Arizona, California or the Nation. In Cochise County, employment is concentrated in the retail trade; healthcare and social assistance; professional, scientific and technical services; and accommodation and food services sectors, accounting for approximately 69 percent of all employment. Retail and wholesale trade, information and accommodation and food services dominate in Santa Cruz County, with the percentage of employment in wholesale trade and information being much higher than other counties in the region, Arizona or the Nation. Employment in Pima County (Tucson) is more in line with the State of Arizona, although it has somewhat more employment in healthcare and social assistance. Employment in Yuma County is dominated by the retail trade, healthcare and social services and accommodation and food services sectors. Employment in Imperial County is also dominated by the retail, healthcare and social services and accommodation and food services sectors; however, the county also has a relatively larger population employed in the forestry, fishing, hunting and agriculture support sector, reflecting importance of agriculture in the region.

3.16.2 Environmental Consequences

3.16.2.1 Proposed Action

The Proposed Action would have no adverse effects on socioeconomic conditions in the region, as there are no people living immediately around the preferred RVSS tower sites. However, the purchase of materials and use of local labor for the Proposed Action would provide a temporary benefit for the local economy in the region. The Proposed Action would increase the detection capability and operational efficiency of CBP and decrease CBV activity in the long-term.

3.16.2.2 Alternative 1

Under Alternative 1, impacts on socioeconomic conditions in the region would be the same as those described for the Proposed Action.

Table 3-33. Employment by Industry Sector

Industry Sector	Cochise	Pima	Santa Cruz	Yuma	Imperial	Arizona	California	U.S.
Forestry, fishing, hunting, & agriculture support	<1%	<1%	<1%	<1%	2%	<1%	<1%	<1%
Mining, quarrying and oil and gas extraction	<1%	<1%	<1%	<1%	<1%	1%	<1%	1%
Utilities	2%	<1%	<1%	<1%	<2%	1%	<1%	1%
Construction	6%	7%	4%	8%	5%	7%	5%	5%
Manufacturing	2%	9%	4%	7%	11%	7%	10%	10%
Wholesale trade	1%	3%	17%	5%	6%	4%	6%	5%
Retail trade	20%	16%	25%	20%	25%	15%	12%	13%
Transportation and warehousing	2%	3%	13%	3%	5%	4%	3%	4%
Information	1%	2%	1%	1%	1%	2%	4%	3%
Finance and insurance	2%	4%	2%	3%	3%	6%	5%	5%
Real estate and rental and leasing	2%	2%	2%	1%	2%	2%	2%	2%
Professional, scientific and technical services	16%	5%	1%	3%	3%	6%	9%	7%
Management of companies and enterprises	<1%	1%	<1%	<1%	<1%	2%	2%	2%
Admin & Support and Waste Management & Remed Srvs	7%	8%	5%	11%	5%	10%	8%	8%
Educational services	2%	2%	1%	1%	1%	2%	3%	3%
Health care and social assistance	18%	18%	9%	15%	14%	14%	13%	15%
Arts, entertainment and recreation	1%	2%	0%	2%	<1%	2%	2%	2%
Accommodation and food services	15%	13%	12%	14%	12%	11%	10%	10%
Other services (except public administration)	4%	5%	3%	4%	3%	4%	4%	5%
Industries not classified	<1%	<1%	0%	<1%	<1%	<1%	<1%	<1%

Source: U.S. Census Bureau 2009

3.16.2.3 No Action Alternative

Under the No Action Alternative, no proposed RVSS tower or access road construction would occur. Population and demographics, housing, income and employment in the project area would remain unaffected. Indirect impacts from illegal activity would continue, and indirect impacts from CBV activities and subsequent USBP interdiction activities would be greater under the No Action Alternative than under the Proposed Action.

3.17 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

3.17.1 Affected Environment

3.17.1.1 Executive Order 12898, Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was issued by President Clinton on February 11, 1994. It was intended to ensure that proposed Federal actions will not have disproportionately high and adverse human health and environmental effects on minority and low-income populations and to ensure greater public participation by minority and low-income populations. It required each agency to develop an agency-wide environmental justice strategy. A Presidential Transmittal Memorandum issued with the EO states that “Each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42 U.S.C. section 4321, et. seq.”

EO 12898 does not provide guidelines as to how to determine concentrations of minority or low-income populations. However, analysis of demographic data on race and ethnicity and poverty provides information on minority and low-income populations that could be affected by a proposed action. The 2010 Census reports numbers of minority individuals and the American Community Survey (ACS) provides the most recent poverty estimates available. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific Islander or Other. Poverty status is used to define low-income. Poverty is defined as the number of people with income below poverty level, which was \$22,314 for a family of four in 2010, according to the U.S. Census Bureau. A potential disproportionate impact may occur when the percent minority in the study area exceeds 50 percent and/or the percent low-income exceeds 20 percent of the population. A disproportionate impact may occur when the percent minority and/or low-income in the study area are meaningfully greater than those in the region.

As shown in Table 3-34, Santa Cruz, Yuma and Imperial counties have populations that are more than 50 percent minority and populations with more than 20 percent living below the poverty level.

Table 3-34. Minority Population and Poverty Data

	Minority Population (percent)	Percent Below Poverty Level (2006-2010)
Cochise County, AZ	41.5	15.7
Pima County, AZ	44.7	16.4
Santa Cruz County, AZ	84.0	25.2
Yuma County, AZ	64.7	20.9
Imperial County, CA	86.3	21.4
Arizona	42.2	15.3
California	59.9	13.7
United States	36.3	13.8

Source: U.S. Census Bureau 2010b and ACS 2010

3.17.1.2 Executive Order 13045, Protection of Children

EO 13045 requires each Federal agency “to identify and assess environmental health risks and safety risks that may disproportionately affect children” and “ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. The potential for impacts on the health and safety of children would be greater where projects are located near residential areas.

3.17.2 Environmental Consequences

3.17.2.1 Proposed Action

Under the Proposed Action, there would be no disproportionate impacts on people, including children, regardless of race or income levels. While Santa Cruz, Yuma and Imperial counties have minority populations that exceed 50 percent and low-income populations that exceed 20 percent, the proposed RVSS sites are not located within urban areas and would not directly impact people living within these counties. The Proposed Action would not result in the displacement or relocation of people. Indirect impacts of the Proposed Action could be beneficial. With the Proposed Action, agent response time to illegal cross-border activities would be reduced, and agents could be more efficiently deployed to patrol the more remote areas, which would likely contribute to a decrease in cross-border violations.

3.17.2.2 Alternative 1

Under Alternative 1, impacts on minority and low-income persons, as well as children, in the region would be the same as those described for the Proposed Action.

3.17.2.3 No Action Alternative

Under the No Action Alternative, there would be no disproportionately high or adverse environmental health or safety impacts on minority or low-income populations or children. Indirect impacts from illegal activity would continue, and indirect impacts from CBV activities and subsequent USBP interdiction activities would be greater under the No Action Alternative than under the Proposed Action.

SECTION 4.0
CUMULATIVE IMPACTS



4.0 CUMULATIVE IMPACTS

This section of the EA defines cumulative impacts, identifies past, present and reasonably foreseeable projects relevant to cumulative impacts, and analyzes the potential cumulative impacts associated with the implementation of the Proposed Action and other projects/programs planned within the ROI.

4.1 DEFINITION OF CUMULATIVE IMPACTS

The CEQ defines cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 C.F.R. 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state and local) or individuals. CEQ guidance on cumulative effects requires the definition of the scope of the other actions and their interrelationship with the Proposed Action (CEQ 1997). The scope must consider geographic and temporal overlaps with the Proposed Action and all other actions occurring within the ROI. Informed decision making is served by consideration of cumulative impacts resulting from activities that are proposed, under construction, recently completed or anticipated to be implemented in the reasonably foreseeable future.

This cumulative impacts analysis summarizes expected environmental effects from the combined impacts of past, current and reasonably foreseeable future activities which affected any part of the human or biological environment impacted by the Proposed Action. Activities were identified for this analysis by reviewing CBP and USBP documents, news/press releases and published media reports and through consultation with planning and engineering departments of local governments and state and Federal agencies.

4.2 PAST IMPACTS WITHIN THE ROI

The ecosystems within the ROI have been significantly impacted by historical and ongoing activities such as ranching, livestock grazing, agricultural and urban development; Federal land use including management for recreation and wildlife; CBV activity and resulting law enforcement actions; and climate change. All of these actions have, to a greater or lesser extent, contributed to several ongoing threats to the ecosystem including loss and degradation of habitat for both common and rare wildlife and plants and the proliferation of roads and trails.

4.3 CURRENT AND REASONABLY FORESEEABLE CBP PROJECTS WITHIN AND NEAR THE ROI

USBP has been conducting law enforcement actions along the border since its inception in 1924, and has continuously transformed its methods as new missions, modes of operations of CBVs, agent needs, and National enforcement strategies have evolved. Development and maintenance of training ranges, station and sector facilities, detention facilities and roads and fences have impacted thousands of acres, with synergistic and cumulative impacts on soil, wildlife habitats,

water quality and noise. Beneficial effects, too, have resulted from the construction and use of these roads and fences, including, but not limited to, increased employment and income for border regions and its surrounding communities; protection and enhancement of sensitive resources north of the border; reduction in crime within urban areas near the border; increased land value in areas where border security has increased; and increased knowledge of the biological communities and prehistory of the region through numerous biological and cultural resources surveys and studies.

With continued funding and implementation of CBP's environmental conservation measures, including use of biological and archaeological monitors, wildlife water systems and restoration activities, adverse impacts due to future and ongoing projects would be avoided or minimized. However, recent, ongoing and reasonably foreseeable proposed projects will result in cumulative impacts.

Current and reasonably foreseeable CBP projects within the USBP Yuma Station's AOR are depicted on Figure 4-1 and include:

- **Installation of new radio repeaters or modernization of existing equipment through the Tactical Communications Land Mobile Radio (TacCom LMR) Project.** All improvements were evaluated under NEPA by individual Categorical Exclusions.
- **Upgrade of existing RVSS towers.** All upgrades were evaluated under NEPA by individual Categorical Exclusions.

Current and reasonably foreseeable CBP projects within the USBP Ajo Station's AOR are depicted on Figure 4-2 and include:

- **Construction and maintenance of SBInet towers.** All SBInet towers were evaluated in a station-specific EA (CBP 2009b).
- **Installation of new radio repeaters or modernization of existing equipment through the TacCom LMR Project.** All improvements, except three antenna sites, were evaluated under NEPA by individual Categorical Exclusions. The three antenna sites are located on the Cabeza Prieta National Wildlife Refuge and will be evaluated in a separate EA.
- **Construction, operation and maintenance of a Forward Operating Base (FOB).** The Ajo Station FOB was evaluated in a separate EA (CBP 2011).

Current and reasonably foreseeable CBP projects within the USBP Nogales Station's AOR are depicted on Figure 4-3 and include:

- **Construction and maintenance of SBInet towers.** All SBInet towers in Nogales Station were evaluated in the Tucson West EA and supplemental EA (CBP 2008 and CBP 2010).

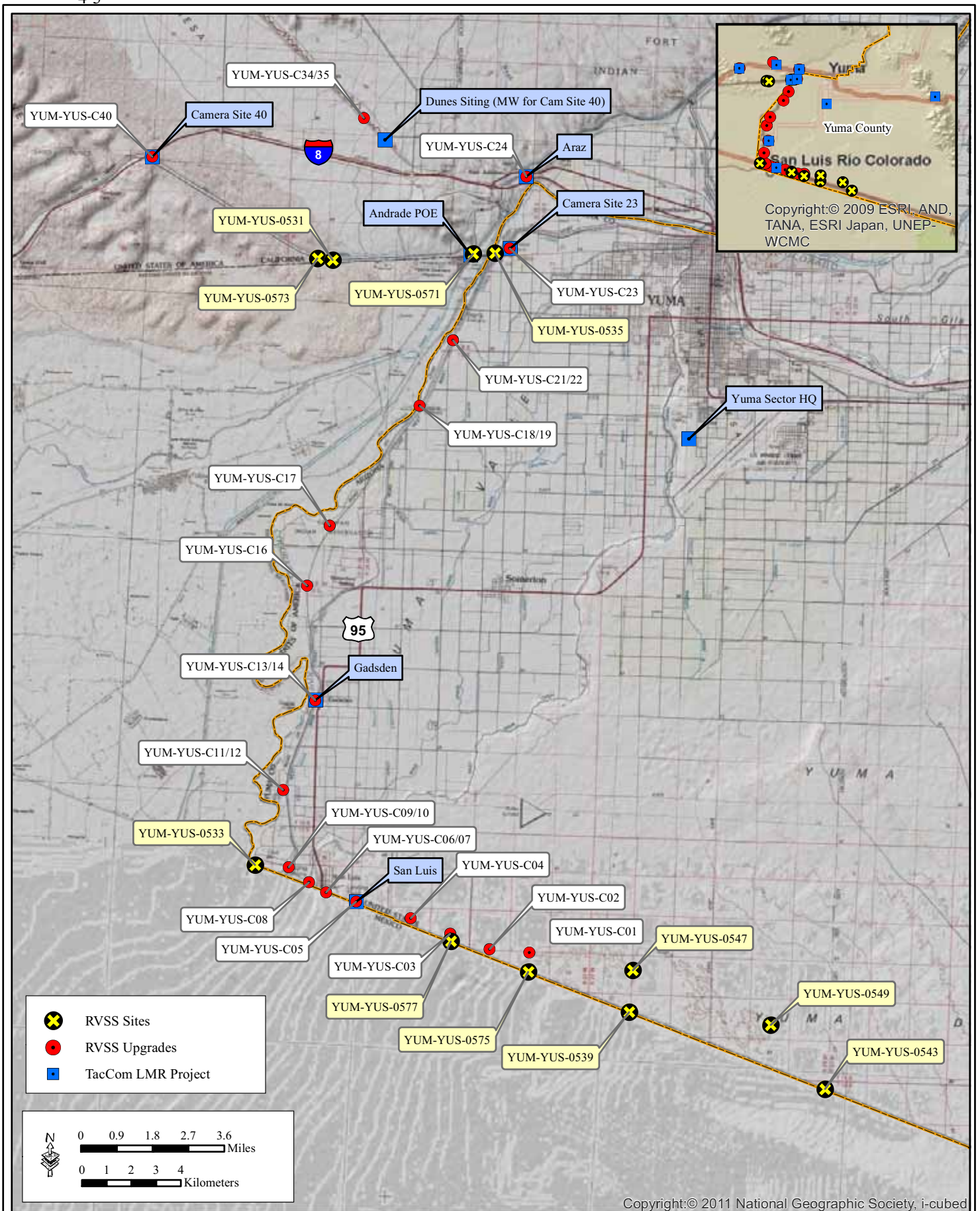


Figure 4-1. Current and Reasonably Foreseeable CBP Projects in Yuma Station's AOR

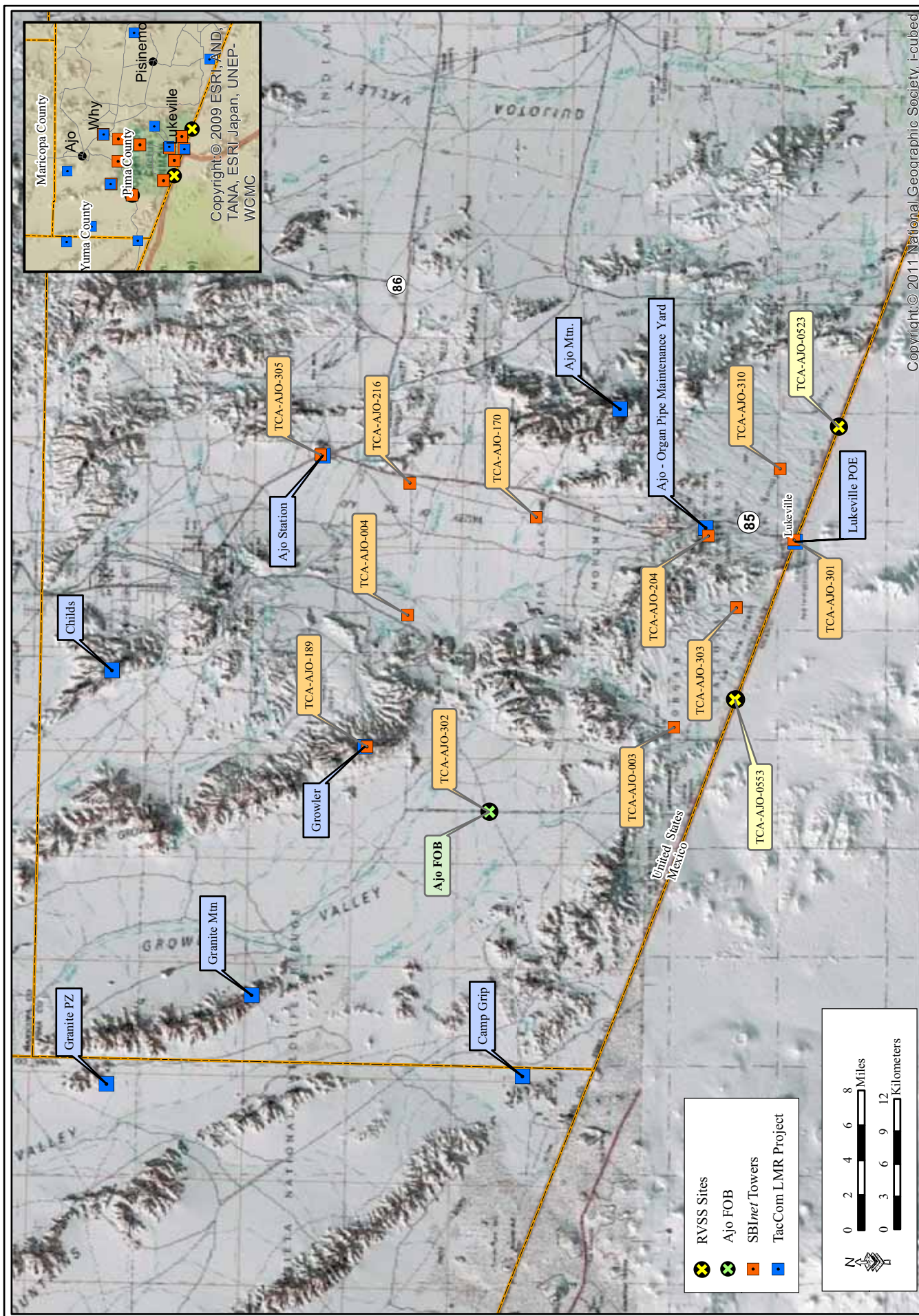


Figure 4-2. Current and Reasonably Foreseeable CBP Projects in Ajo Station's AOR

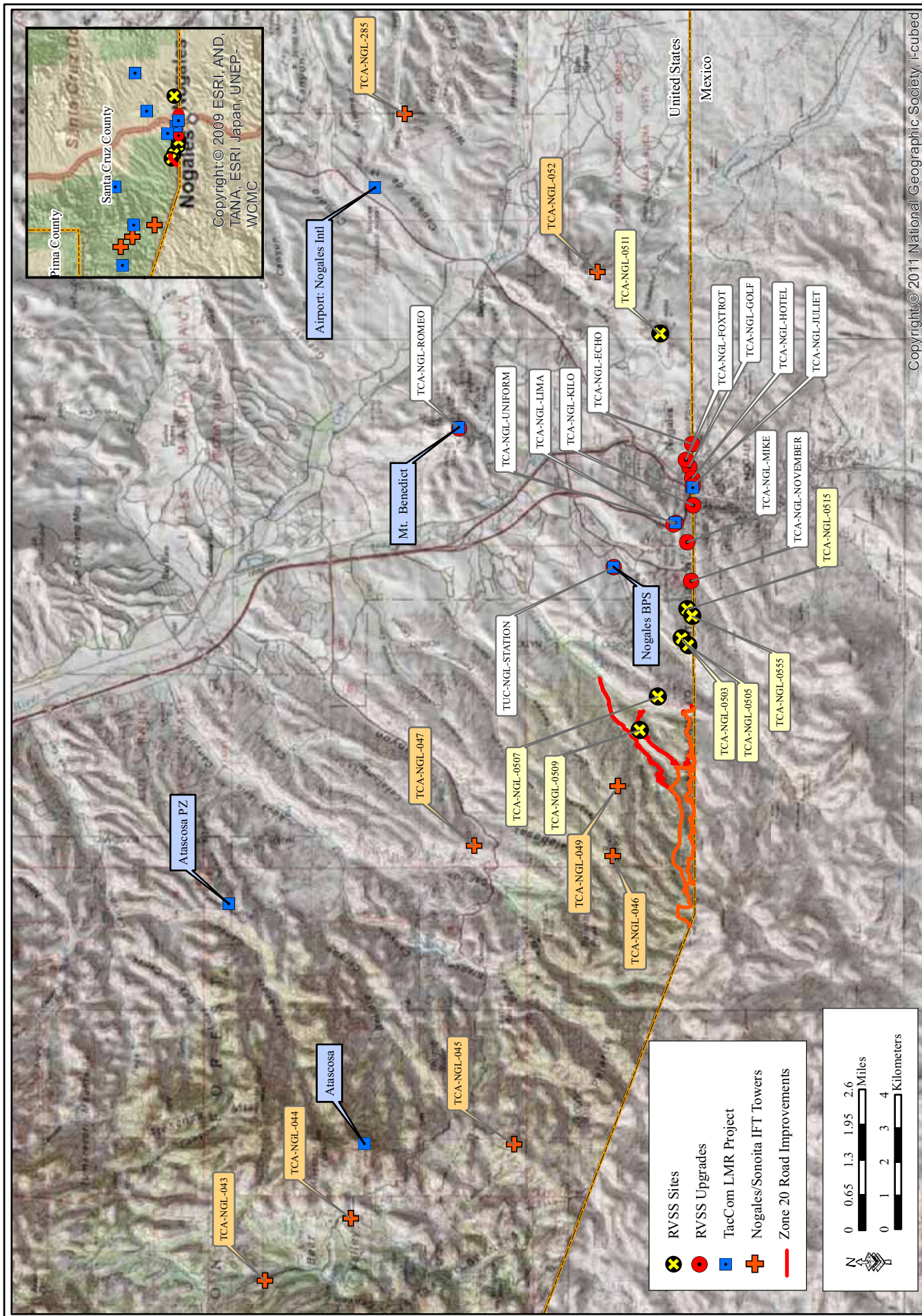


Figure 4-3. Current and Reasonably Foreseeable CBP Projects in Nogales Station's AOR

- **Construction, repair and maintenance of border road and access roads.** All impacts from road construction, repair and maintenance were addressed in a project-specific Environmental Stewardship Plan (CBP 2012e).
- **Upgrade of existing RVSS towers.** All upgrades were evaluated under NEPA by individual Categorical Exclusions.
- **Installation of new radio repeaters or modernization of existing equipment through the TacCom LMR Project.** All improvements were evaluated under NEPA by individual Categorical Exclusions.

Current and reasonably foreseeable CBP projects within the USBP Sonoita Station's AOR are depicted in Figure 4-4 and include:

- **Construction and maintenance of 15 integrated fixed towers (IFTs).** All impacts from the construction, operation and maintenance of these towers were addressed in previous NEPA documents for the Tucson West Project (CBP 2008 and 2010).

Current and reasonably foreseeable CBP projects within the USBP Naco Station's AOR are depicted on Figure 4-5 and include:

- **Upgrade of existing RVSS towers.** All upgrades were evaluated under NEPA by individual Categorical Exclusions.
- **Installation of new radio repeaters or modernization of existing equipment through the TacCom LMR Project.** All improvements were evaluated under NEPA by individual Categorical Exclusions.

Current and reasonably foreseeable CBP projects within the USBP Douglas Station's AOR are depicted on Figure 4-6 and include:

- **Proposed construction and maintenance of IFTs.** All impacts from the construction and maintenance 10 new IFTs and the retrofit of 2 existing towers in the Douglas Station's AOR are being evaluated in a station-specific EA (CBP 2012f).
- **Replacement of legacy fence.** The fence replacement was evaluated under NEPA by an individual Categorical Exclusion.
- **Upgrade of existing RVSS towers.** All upgrades were evaluated under NEPA by individual Categorical Exclusions.
- **Installation of new radio repeaters or modernization of existing equipment through the TacCom LMR Project.** All improvements were evaluated under NEPA by individual Categorical Exclusions.
- **Construction, operation and maintenance of a Forward Operating Base (FOB).** The new Douglas Station FOB at Floyds Pocket was evaluated in a separate Supplemental EA (CBP 2012g).

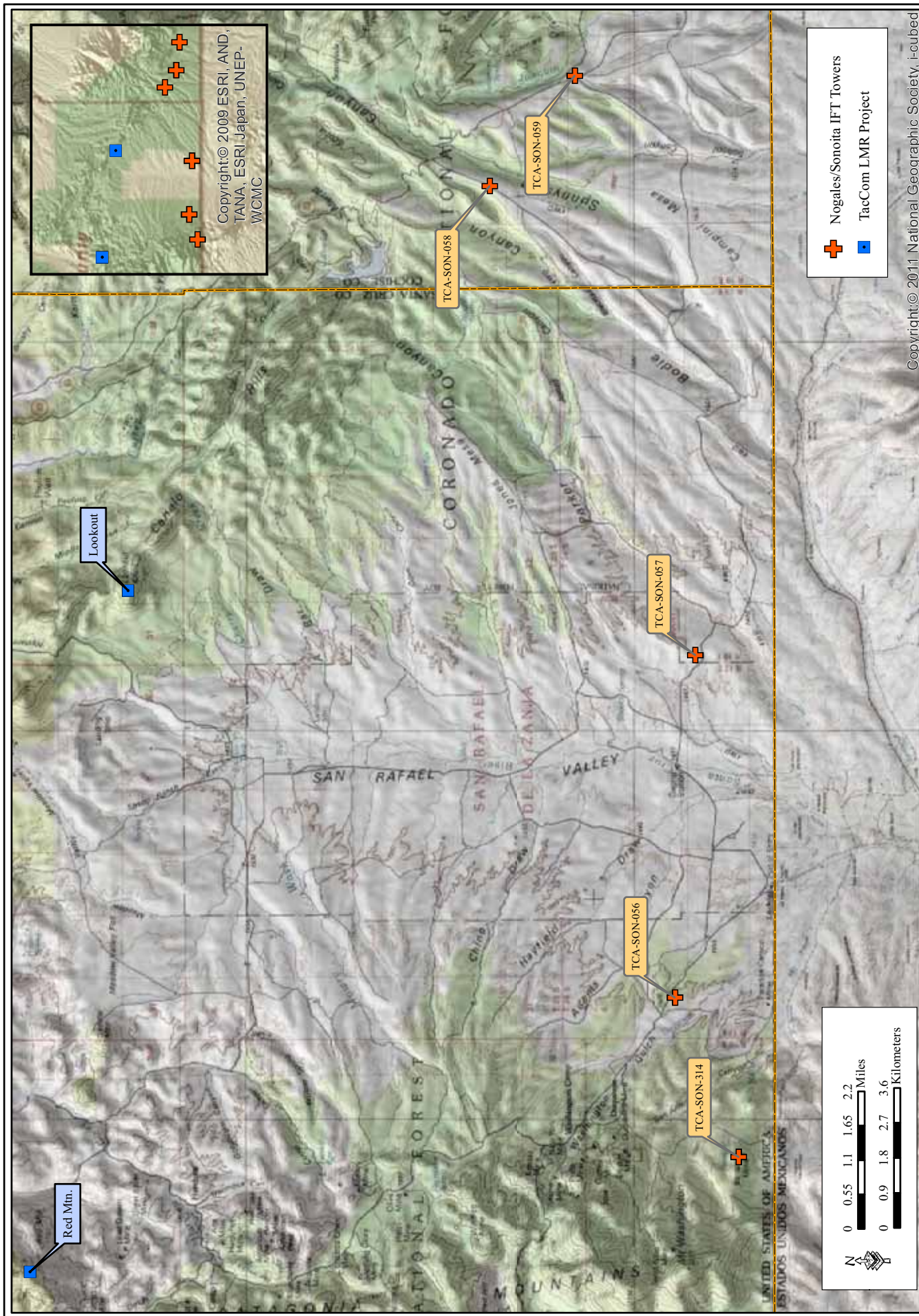


Figure 4-4. Current and Reasonably Foreseeable CBP Projects in Sonoita Station's AOR

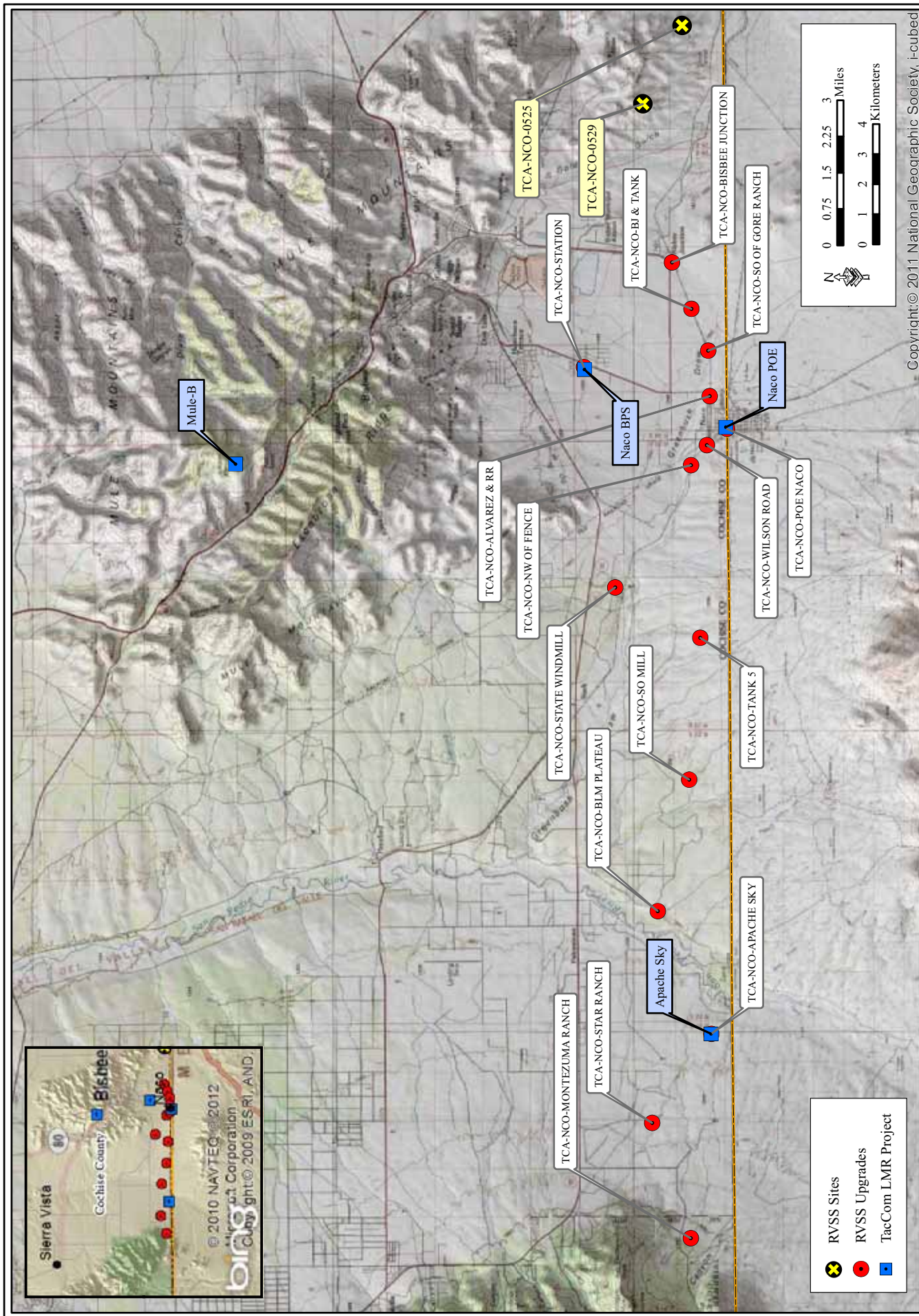


Figure 4-5. Current and Reasonably Foreseeable CBP Projects in Naco Station's AOR

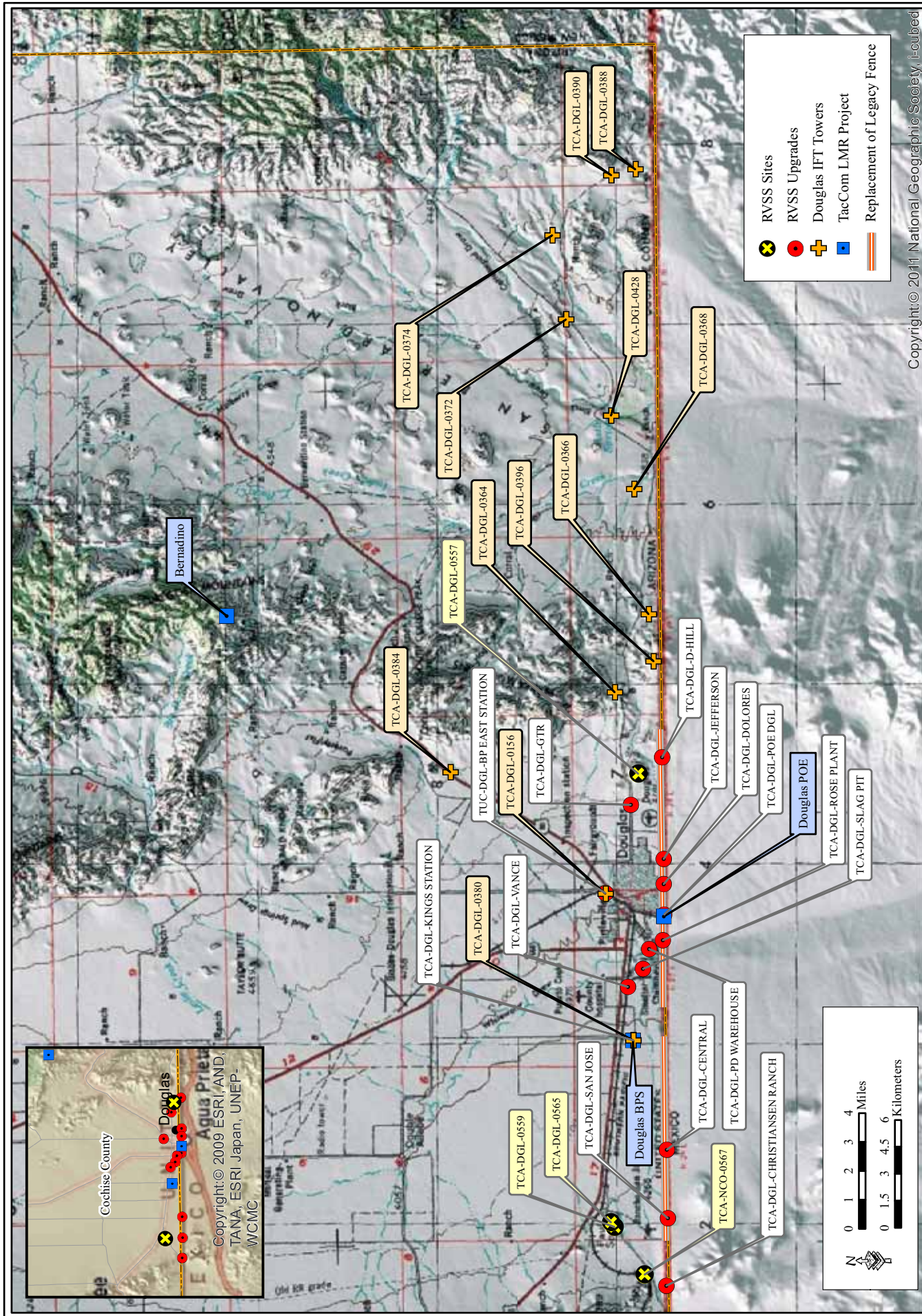


Figure 4-6. Current and Reasonably Foreseeable CBP Projects in Douglas Station's AOR

Current and reasonably foreseeable CBP projects within the Tucson and Yuma Sector:

- **Proposed tactical infrastructure maintenance and repair along the United States/Mexico International Border in Arizona.** Currently, CBP is proposing the maintenance and repair of existing tactical infrastructure along the United States/Mexico border in Arizona. The proposed project would occur along or within 50 miles of the United States/Mexico border, and most of the maintenance and repair activities associated with the program would occur within 25 miles of the border. However, one road to be maintained under the program is located 50 to 60 miles north of the border near Three Points, Arizona. The program is being evaluated in a separate NEPA document and Section 7 consultation (CBP 2012h).

4.4 OTHER AGENCY/ORGANIZATION PROJECTS WITHIN AND NEAR THE ROI

Projects that could affect areas in use by CBP are currently being planned by other Federal entities. CBP maintains close coordination with these agencies to ensure that CBP activities do not conflict with other agencies' policies or management plans. CBP would consult with applicable Federal agencies prior to performing any construction activities and would coordinate operations so that they do not inappropriately impact the mission of other agencies. Other agencies, such as BLM, Reclamation, USFS, NPS and USFWS, routinely prepare or update Resource Management Plans for the resources they manage. In addition, public works improvement projects are currently being planned by state and local entities in Cochise, Santa Cruz, Pima and Yuma counties. The majority of impacts would occur in existing road right-of-ways as part of highway maintenance and repair projects.

Past National Park Services projects on the OPCNM include:

- Septic system reconstruction
- Repair of the berm at Kuakatch Wash
- Construction of a pull-out off SR 85 for USBP horse patrol units
- The installation of four modular structures

All of these projects occurred on previously disturbed areas and the cumulative effects of these actions are negligible.

4.5 ANALYSIS OF CUMULATIVE IMPACTS

Impacts on each resource were analyzed according to how other actions and projects within the ROI might be affected by the Proposed Action and Alternative 1. Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis the intensity of impacts will be classified as negligible, minor, moderate or major. These intensity thresholds were previously defined in Section 3.1. Due to the similarity of the action alternatives for this project when analyzed for cumulative impacts, the impacts would be similar for the two action alternatives. A summary of the anticipated cumulative impacts on each resource is presented below.

4.5.1 Land Use

A major impact would occur if any action is inconsistent with adopted land use plans or if an action would substantially alter those resources required for supporting or benefiting the current use. The majority of the proposed CBP infrastructure (e.g., FOBs, IFT, TacCom equipment installations and RVSS towers) are sited on undeveloped lands in rural areas. Construction of the FOBs, tower sites and access roads would directly change the current land use as directed by the policies of the land managing agencies, (i.e., USFWS, USFS, Reclamation, NPS, BLM or ASTL) and have indirect effects on the ability of the managing agencies to implement land use policies. The direct effects of removing small areas of land from their current land use and replacing them with areas of law enforcement land use would be localized and is not part of a trend. Thus, the direct cumulative effects of changing land use would be negligible.

4.5.2 Soils

A major impact would occur if the action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction and would create a risk to life or property, or if there would be a substantial reduction in agricultural production or loss of Prime Farmland soils. The Proposed Action and other CBP actions have not reduced Prime Farmland soils or agricultural production regionally, as much of the land developed by CBP has not been used for agricultural production. Construction of FOBs, IFTs, TacCom equipment, RVSS towers and access roads would result in disturbance of soils. CBV foot and vehicle traffic trample vegetation and compact soils, resulting in soils more susceptible to erosion. Soil disturbance could lead to long-term erosion; however, pre- and post-construction SWPPP measures would be implemented to control soil erosion. The impact on soils from the Proposed Action, when combined with past and proposed projects in the region, would be considered a moderate cumulative adverse effect.

4.5.3 Water Resources

Although withdrawals from the aquifers would be below the maximum recharge capacity, several of the aquifers in the project area are in a deficit situation. Drainage patterns of surface water sources would not be impacted by the Proposed Action or any other proposed project in the vicinity of the alternative sites. Therefore, the Proposed Action, in conjunction with other regionally proposed projects, would create a moderate cumulative effect on water resources in the region.

4.5.4 Vegetative Habitat

The small amount of vegetative habitat permanently altered by the Proposed Action, in conjunction with other regionally proposed projects and the vegetation trampled and otherwise impacted by CBV traffic, would create a moderate cumulative effect in the region.

4.5.5 Wildlife Resources

The project area is in a location that provides an important route used by migratory birds, bats and other wildlife. There is a possibility that the proposed IFTs, TacCom equipment and RVSS towers could pose hazards to migratory birds and even bird mortality, and the Proposed Action would have a long-term, minor adverse effect on migratory birds. CBV foot and vehicle traffic trample vegetation, compact soils, degrade habitat and generally harass wildlife. The Proposed

Action, in conjunction with other regionally proposed projects, would have a minimal cumulative effect on wildlife populations in the region.

4.5.6 Protected Species and Critical Habitats

A major impact on threatened and endangered species would occur if any action resulted in a jeopardy opinion for any endangered, threatened or rare species. IFTs, TacCom equipment installations, RVSS towers, new roads and repairs to approach roads would occur within habitat potentially occupied by the jaguar or ocelot. However, given the lack of habitat in the project area and the fact the RVSS towers would not obstruct migratory corridors, the likelihood of disturbing these species as a direct result of the Proposed Action is highly unlikely. No major cumulative impacts are expected on jaguars and ocelot as a result of the Proposed Action.

Two of the proposed RVSS site and access roads exists within 5 miles of a known lesser long-nosed bat roost. Two TacCom equipment installations are within 20 miles of lesser long-nosed bat roosts. The potential loss of forage plants during RVSS construction would occur at seven preferred RVSS sites. However, impacted forage plants would be relocated or replaced as part of the Proposed Action. Loss of agave would be long-term and negligible and would cause minor cumulative adverse effects on lesser long-nosed bat populations in conjunction with other projects.

Construction of two RVSS sites, new roads, repairs to approach roads and installation of one TacCom site would occur within or near Mexican spotted owl Critical Habitat. Habitat conditions at the proposed sites lack the PCEs. Woody vegetation noted at the proposed tower sites and on the surrounding landscape includes velvet mesquites, oak trees and wait-a-minute bush. Tree density and diversity is low, and no oak trees with a dbh greater than 12 inches were observed within the survey area. Thus, there would be no major cumulative adverse effects on the Mexican spotted owl or its designated Critical Habitat.

Construction of two RVSS sites, repairs to approach roads, seven RVSS upgrade sites and installation of one TacCom site would occur within or near southwestern willow flycatcher Critical Habitat, suitable habitat and within a migratory pathway. Very little vegetation would be removed from the RVSS upgrade and TacCom sites. Thus, there would be no major cumulative adverse effects on the southwestern willow flycatcher or its designated Critical Habitat.

Construction of two RVSS sites, a FOB, new access roads, repairs to approach roads and installation of three TacCom sites would occur within the known range for Sonoran pronghorn on CPNWR and OPCNM. Sonoran pronghorn population numbers are significantly low and both short-term (i.e., avoidance of construction areas and degradation of vegetation communities) and long-term (i.e., tower operation and maintenance and loss of vegetation communities) reductions in the availability of these resources would have an adverse effect on this population. Implementation of BMPs will make effects unlikely, and if present, discountable. There would be no major cumulative adverse effects on Sonoran pronghorn as a result of the Proposed Action.

Construction of one RVSS site and Zone 20 road improvements would occur within the Alamo-Pena Blanca-Pecks Canyons Management Area. This Management Area is primarily an area of

former occupation and no Chiricahua leopard frogs were observed during surveys conducted by AGFD in 2008 and 2009. There would be no major cumulative impacts on Chiricahua leopard frogs as a result of the Proposed Action.

Two proposed RVSS tower sites, one new access road, repairs to approach roads and three TacCom equipment installations would occur within potential Sonoran desert tortoise habitat. However, all of these proposed tower sites have been disturbed as a result of previous actions. Through the implementation of BMPs (i.e., biological monitors) no major cumulative impacts on Sonoran desert tortoise would occur as a result of the Proposed Action.

4.5.7 Cultural Resources

The Proposed Action would not affect cultural resources or historic properties. Therefore, this action, when combined with other existing and proposed projects in the region, would result in a negligible cumulative impact on cultural resources or historic properties.

4.5.8 Air Quality

The emissions generated during implementation of the Proposed Action would be temporary and minor, and generator emissions would be intermittent and rare. Therefore, the Proposed Action, in conjunction with other regionally proposed projects, would be considered a negligible cumulative effect.

As discussed earlier, the main sources of increased concentrations of GHGs due to human activity include the combustion of fossil fuels and deforestation (CO₂), livestock and rice farming, land use and wetland depletions, landfill emissions (CH₄), refrigeration system and fire suppression system use and manufacturing (CFC) and agricultural activities, including the use of fertilizers (California Energy Commission 2007). Regionally proposed projects include many of these GHG-producing activities, especially livestock farming, large-scale agricultural activities and fertilizer use. The GHGs and thus warming potential for the atmosphere produced by the regional activities and this project cumulatively would be considered a minor effect.

4.5.9 Noise

There would be a permanent increase in vehicular traffic in the region's airshed. One vehicle trip per month to each tower would be required for maintenance. Thus, the increased vehicle traffic would be intermittent. Actions would be considered to cause major impacts if they permanently increase ambient noise levels over 65 dBA. Most of the noise generated by the Proposed Action would occur during construction and, thus, would not contribute to cumulative impacts on ambient noise levels. Operation of RVSS sites would not create any increase in ambient noise levels except during generator use. Thus, the noise generated by the Proposed Action, when considered with the other existing and proposed projects in the region, would be considered a minor cumulative effect.

4.5.10 Utilities and Infrastructure

Actions would be considered to cause major impacts if they require greater utilities or infrastructure use than can be provided. It is anticipated that local grid power systems have the capacity to supply the proposed RVSS towers, where applicable; therefore, there would be a negligible cumulative effect.

4.5.11 Radio Frequency Environment

The Proposed Action in conjunction with the proposed TacCom and IFT projects would have a cumulative effect on the RF Environment. However, all of the communications equipment used for these projects would be approved by NTIA and FCC. Thus, the Proposed Action would have a negligible cumulative effect.

4.5.12 Roadways and Traffic

Impacts on roadways and traffic would be considered to cause major impacts if the increase of average daily traffic exceeded the ability for the surface streets to offer a suitable level of service for the area. A total of approximately 240 vehicle trips per year are anticipated for all tower maintenance and refueling under the Proposed Action. The Proposed Action, in conjunction with other projects in the region, would have a minor cumulative effect on traffic in the region.

4.5.13 Aesthetics and Visual Resources

Actions that cause the permanent loss of the characteristics that make an area visually unique or sensitive would be considered to cause a major impact. The Proposed Action would have a long-term, moderate impact on aesthetic qualities within three to five miles of each proposed IFT or RVSS tower. Depending on the location and elevation of a viewer, and due to the nature of the landscape throughout Arizona, it is possible that some IFTs and RVSS could be visible from up to 15 miles away. As such, the visual impact of the IFTs and RVSS would be readily apparent locally. Thus, the Proposed Action, in conjunction with other projects in the region, would result in moderate adverse cumulative impacts on the region's visual resources.

4.5.14 Hazardous Materials

Major impacts would occur if an action creates a public hazard, if the site is considered a hazardous waste site that poses health risks or if the action would impair the implementation of an adopted emergency response or evacuation plan. Only minor increases in the use of hazardous substances would occur as a result of the construction and maintenance of the FOBs, access roads, IFTs, RVSS and TacCom towers. BMPs would be implemented to minimize the risk from hazardous materials during construction. No health or safety risks would be created by the Proposed Action. The cumulative effects of the Proposed Action, when combined with other ongoing and proposed projects in the region, would be considered negligible.

4.5.15 Socioeconomics

Major impacts on socioeconomic conditions include displacement or relocation of residences or commercial buildings; increases in long-term demands on public services in excess of existing and projected capacities; and disproportionate impacts on minority and low-income families. The Proposed Action would have no adverse effects on socioeconomic conditions in Yuma, Pima, Santa Cruz or Cochise counties in Arizona and Imperial County, California, and there would be no disproportionate impacts on people, regardless of race or income levels. Thus, the effects of the Proposed Action, when combined with other ongoing and proposed projects in the region, would be considered negligible cumulative effects.

4.5.16 Environmental Justice and Protection of Children

There would be no displacement of persons (minority, low-income, children or otherwise) as a result of implementing the Proposed Action. Therefore, the effects of the Proposed Action on

environmental justice and the protection of children, when combined with other ongoing and proposed projects in the region, would be considered negligible cumulative effects.

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 5.0
BEST MANAGEMENT PRACTICES



5.0 BEST MANAGEMENT PRACTICES

This chapter describes those measures that will be implemented to reduce or eliminate potential adverse impacts on the human and natural environment. Many of these measures have been incorporated as standard operating procedures by CBP on past projects. BMPs will be presented for each resource category that would be potentially affected. It should be emphasized that these are general BMPs; development of specific BMPs will be required for certain activities implemented under the action alternatives. The proposed BMPs will be coordinated through the appropriate agencies and land managers/administrators, as required.

It is Federal policy to reduce adverse impacts through the sequence of avoidance, minimization, and finally, compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc., and is typically coordinated with the USFWS and other appropriate Federal and state resource agencies.

5.1 GENERAL CONSTRUCTION ACTIVITIES

All BMPs to be implemented by the project contractor will be included in the contract. BMPs will be implemented as standard operating procedures during all construction activities, such as proper handling, storage and/or disposal of hazardous and/or regulated materials and other waste. All construction will follow DHS Directive 025-01, *Sustainable Practices for Environmental, Energy and Transportation Management*. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils and solvents will be collected and stored in clearly labeled tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be completed following accepted industry guidelines, and all vehicles would have drip pans during storage to contain minor spills and drips. Any spill of a reportable quantity will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock) will be used to absorb and contain the spill. Any reportable spill of a hazardous or regulated substance will be reported immediately to on-site environmental personnel, who would notify appropriate Federal and state agencies. In addition to the SWPPP, an SPCCP will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan.

All waste oil and solvents will be recycled. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported and disposed of in accordance with all Federal, state and local regulations, including proper waste manifesting procedures.

Non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in the on-site receptacles. Solid waste receptacles will be maintained, will be collected and will be disposed of by a local waste disposal contractor.

All contractors, work crews (including National Guard and military personnel), and CBP personnel in the field performing construction and maintenance activities will receive training. At a minimum, training will provide the following information: maps indicating occurrence of potentially affected and Federally listed species; the general ecology, habitat requirements and

behavior of potentially affected Federally listed species, the conservation measures listed here and their intent; reporting requirements; and the penalties for violations of the Endangered Species Act. It will be the responsibility of the project manager(s) to ensure that their personnel are familiar with BMPs, specific conservation measures and other limitations and constraints. Photographs of potentially affected Federally listed species will be incorporated into the training and posted in the contractor and resident engineer's office where they will remain through the duration of the project. Copies will be made available that can be carried while conducting proposed construction activities. In addition, training in identification of non-native invasive plants and animals will be provided for contracted personnel engaged in follow-up monitoring of construction sites.

A Fire Management Plan will be developed as part of tower construction and in coordination with the landowner or land management agency. Clearing of vegetation within the tower site using herbicides will be considered as an option to reduce fire potential. The area cleared would be minimized to the extent practicable to achieve an adequate reduction of fire potential. Clearing could also be conducted around the equipment shed or the site perimeter.

Rodenticides will not be utilized. Pets are not permitted inside the project area or adjacent native habitats. CBP will notify USFWS and DOI land managers two weeks before any project construction and maintenance activities begin and within 1 week after project construction and maintenance activities are completed.

5.2 SOILS

Suitable fencing will be installed around the perimeter of the facility to contain vehicles and people and prevent accidental impacts on soils on adjacent properties. Vehicular traffic associated with construction activities and operational support activities will remain on established roads to the maximum extent practicable. Before, during and after soil-disturbing activities, areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various BMPs, such as straw bales, silt fencing, aggregate materials and wetting compounds to decrease erosion. A SWPPP will be prepared prior to construction activities, and BMPs described in the SWPPP shall be implemented to reduce erosion. The roads will be properly designed and located such that the potential for roadbed erosion will be avoided or minimized. The widening of existing or created roadbed beyond the design parameters due to grading and use will be avoided through proper design and location of roads.

Organic material will be collected and stockpiled during construction to be used for erosion control after construction while the areas naturally revegetate. Materials used for on-site erosion control will be free of non-native plant seeds and other plant parts to limit potential for infestation. Because natural materials cannot be certified as completely weed-free, use of such materials will be followed up by post-construction monitoring. All areas not immediately developed will be planted with native plant species, landscaped or allowed to naturally revegetate to minimize erosion potential.

Grading or topsoil removal within the designated disturbance area will be limited to areas where this activity is needed to provide the ground conditions necessary for construction or maintenance activities. Road repairs will avoid making windrows with the soils once grading activities are completed, and any excess soils will be used on-site to raise and shape the tower site and/or road surface. The volume and type of spoil material from construction activities will be quantified. CBP will work with the appropriate land management agency to determine the disposition and location of spoil material (e.g., spoils from drilling tower footers or related road construction). If requested by the land management agency, the contractor will haul spoil material to an appropriate off-site disposal area.

5.3 BIOLOGICAL RESOURCES

Construction equipment will be cleaned prior to departing the project corridor to minimize the spread and establishment of non-native invasive plant species. The removal of native vegetation and disturbance of soils will be minimized. Soil disturbances in temporarily impacted areas will be rehabilitated and will include revegetation or the distribution of organic and geological materials (i.e., boulders and rocks) over the disturbed area to reduce erosion while allowing the area to naturally vegetate. Removal of non-native plants will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. Herbicides can be used according to label directions if they are not toxic to Federally listed species that may be in the area.

The Migratory Bird Treaty Act requires that Federal agencies coordinate with the USFWS if a construction activity would result in any harm to a migratory bird, including breeding and nesting activities. If construction or clearing activities were scheduled during the nesting season (typically March 1-September 1), preconstruction surveys for migratory bird species would occur immediately prior to the start of any construction activity to identify active nests. If construction activities would result in the disturbance or harm of a migratory bird, then coordination with USFWS, AGFD and CDFG would occur, and applicable permits for relocation of nests, eggs or chicks would be obtained prior to construction or clearing activities. In addition, where possible, a 200-foot diameter buffer zone would be established around active nests until nestlings have fledged and abandoned the nest. Another environmental design measure that would be considered is to schedule clearing and grubbing activities outside the nesting season, negating the requirement for nesting bird surveys. Tower designs will follow the most recent bird and bat strike avoidance guidance. Recommendations of the Avian Power Line Interaction Committee and USFWS (2005) for any required aboveground lines, transformers or conductors will be implemented.

Security lights would also be installed such that the direction of illumination is downward toward the tower facilities and away from all native vegetative communities, with shields on lights to prevent light from going up into sky or out laterally into landscape. Fugitive illumination beyond the site boundaries would be less than 2 lumens. Security lighting would be limited, to the greatest extent practicable, by minimizing the number of lights used. The security lighting would be controlled by a motion detector and only low-sodium bulbs would be used. Night-vision-friendly strobe lights necessary for CBP operational needs will also use the minimum wattage and number of flashes per minute necessary to ensure operational safety.

The towers would be removed within 12 months of cessation of use if CBP determines they are no longer needed. The site would be restored to natural habitat conditions.

5.4 PROTECTED SPECIES

Nonhazardous waste materials and other discarded materials, such as construction waste, will be contained until removed from the construction and maintenance sites.

All food-related trash items such as wrappers, cans, bottles and food scraps will be disposed of in closed containers and removed daily from the project site.

Wastewater is to be stored in closed containers on-site until removed for disposal. Wastewater is water used for project purposes that is contaminated with construction materials or from cleaning equipment and thus carries oils or other toxic materials or other contaminants as defined by state and Federal regulations. Concrete wash water will not be dumped on the ground but is to be collected and moved off-site for disposal.

A mitigation plan will be implemented that includes restoration of areas of temporary impact associated with the RVSS Upgrade Program (new towers). The plan will be developed in coordination with the USFWS and appropriate DOI land management agencies. The need for and extent of site restoration will be at the discretion and under the direction of the land manager. The plan will include provisions to recontour the site, replace soils and provide proper drainage; replant native plants salvaged prior to construction; and revegetate with a mixture of native plant seeds or nursery plantings (or both) derived from acceptable sources as determined by the corresponding land manager. The plan will also address monitoring of establishment of non-native plants and appropriate control measures. Training to identify non-native plants will be provided to contractor personnel as needed. The plan will also identify success criteria and monitoring and reporting requirements. The plan will be finalized before the initiation of project construction.

Biological monitors will be present during all construction activities with the potential to disturb Federally listed and state-listed species or damage their habitats and will be in sight of all construction equipment, vehicles and personnel during all construction activities (Table 5-1). Biological monitors will communicate the purpose of all conservation measures and will be able to consult project managers on appropriate actions. Prior to the arrival of construction equipment or vehicles, the biological monitors will survey habitats potentially occupied by Federally listed or state-listed species.

Duties of the biological monitor will include ensuring that activities stay within designated project footprints, evaluating the response of Federally listed species that come near the project site, and implementing the appropriate response actions. Biological monitors will notify the construction manager of any activities that may harm or harass an individual of a Federally listed species. Upon such notification, the construction manager shall temporarily suspend all subject activities and notify the Contracting Officer, the Administrative Contracting Officer and the Contracting Officer's Representative of the suspension so that the key personnel may be notified and apprised of the situation and the potential conflict can be resolved.

Table 5-1. Towers Requiring Biological Monitors

Species	Tower Sites
Chiricahua leopard frog	TCA-NGL-0509
Sonoran desert tortoise	TCA-AJO-0523 TCA-AJO-0553
Flat-tailed horned lizard	YUM-YUS-0539 YUM-YUS-0543 YUM-YUS-0547 YUM-YUS-0549 YUM-YUS-0573 YUM-YUS-0575 YUM-YUS-0577
Mexican spotted owl	TCA-NGL-0507 TCA-NGL-0509
Jaguar	TCA-NGL-0505 TCA-NGL-0507 TCA-NGL-0509 TCA-NGL-0511 TCA-NGL-0555 TCA-NCO-0525 TCA-NCO-0529 TCA-NCO-0567 TCA-DGL-0557 TCA-DGL-0565
Lesser long-nosed bat	TCA-AJO-0523 TCA-AJO-0553 TCA-NGL-0507 TCA-NGL-0511 TCA-NCO-0525 TCA-NCO-0529 TCA-DGL-0557
Ocelot	TCA-NCO-0525 TCA-NCO-0529 TCA-NCO-0567 TCA-DGL-0557 TCA-DGL-0565
Sonoran pronghorn	TCA-AJO-0553

If an individual of a Federally listed species is found in the designated project area, work will cease in the area of the species until either a qualified biological monitor can safely remove the individual, or it moves away on its own. Individual animals found in the project area will be relocated by a qualified specialist (an individual or agency personnel with permits to handle the species) to a nearby safe location in accordance with accepted species-handling protocols. Information on the appropriate protocols will be provided via the IPaC or USFWS. Biological monitors would document the use of BMPs, any actions not compliant with BMPs and any incidence of harm or harassment of Federally listed species. Reports from the biological monitor will be used for development of the post-construction report.

Post-construction monitoring will be conducted annually for a period of three years following the completion of construction activities to document any erosion and ensure that rehabilitation of temporarily disturbed areas is successful. Road deterioration that affects surrounding Federally listed species habitat areas will be identified, reported and remediated on an annual basis using the conservation measures negotiated with USFWS under Section 7 consultation.

A report will be provided to USFWS and DOI land management agencies within 90 days of project construction completion. The report will include a complete description of the action (construction component) implemented (including photographs; total acres impacted; total acres of Sonoran pronghorn habitat impacted; total number of lesser long-nosed bat food plants impacted; length of time to complete the project; all BMPs and conservation measures implemented, including all Sonoran pronghorn daily and other biological monitoring reports). As implementation of some measures will continue after project construction is completed, the report will also identify BMPs and conservation measures still under implementation or proposed for implementation and a time frame for completing the measures. Until all BMPs and conservation measures are fully implemented, reports will be provided annually by February 1 to the USFWS and DOI land management agencies that describe implementation of the measures. In both the initial and the annual reports, a description of how well the BMPs and conservation measures worked, suggestions for improvements to the measures, and implementation of any restoration plan and monitoring post-construction will be provided.

Sonoran Pronghorn and Lesser Long-Nosed Bat

All areas where ground disturbance will occur will be demarcated using flagging or construction fencing, and all activities will remain within flagged boundaries. The area of disturbance will be minimized by limiting deliveries of materials and equipment to only those needed for effective project implementation. Roads will be properly designed to avoid and minimize animal collisions, particularly with Sonoran pronghorn, and fragmentation of Sonoran pronghorn populations.

The number of vehicles traveling to and from the project site and the number of trips per day will be minimized to reduce the likelihood of disturbing animals in the area or injuring an animal on the road. Construction speed limits will not exceed 35 mph on major unpaved roads (i.e., graded with ditches on both sides) and 25 mph on all other unpaved roads. On the Organ Pipe Cactus National Monument (TCA-AJO-0523 and -0553), all tower-related vehicle speeds will be limited to 25 mph.

CBP will ensure a qualified Sonoran pronghorn monitor is on-site during tower construction at TCA-AJO-0553. The monitor will conduct hilltop surveys (visual and telemetry, if appropriate) for Sonoran pronghorn at sunrise in close coordination with land managers and AGFD. Sonoran pronghorn monitoring protocols will be consistent with those used for the SBInet Ajo-1 Tower Project (AESO/SE 22410-F-2009-0089 and 22410-1389-0078-R6). If Sonoran pronghorn are detected within 2 miles of proposed daily project activities, no project work will begin until Sonoran pronghorn move on their own volition to a distance greater than 2 miles from the activities (note: monitoring method and buffer distance is project-specific; 2 miles is for tower construction, see criteria for project maintenance below). The Sonoran pronghorn monitoring protocols include procedures to be followed if and when Sonoran pronghorn are detected within

the 2-mile radius around work activities, including CBP Sonoran pronghorn monitor communications with DOI land manager, cessation of construction, and egress from the construction site. Additionally, the protocol require the Sonoran pronghorn monitor to contact AGFD on a weekly basis to obtain the results of the telemetry surveys and use the information to aid in weekly monitoring. CBP and their environmental monitors, Organ Pipe Cactus National Monument, and AGFD will meet at least 2 weeks prior to the initiation of any tower construction activities at TCA-AJO-0553 to discuss Sonoran pronghorn monitoring protocols.

Seasonal restrictions are intended to prevent impacts on individuals and habitats during breeding seasons (Table 5-2). Where seasonal restrictions cannot be met, a biological monitor will be required to minimize potential impacts of construction-related activities.

Table 5-2. Seasonal Restrictions for Potentially Affected Species

Species	Restriction	Purpose	Tower Sites
Lesser long-nosed bat	Avoid construction activities within 4 miles of bat roosts between May 1 and September 30.	Avoid disturbing roosting bats.	TCA-AJO-0553 TCA-AJO-0523
Sonoran pronghorn	Close roads and place vehicle restrictions March 15 to July 15 within 1 mile of known populations. Speed limits will be limited to 25 mph.	Avoid killing adults and sub-adults.	TCA-AJO-0553

All project maintenance activities that may disturb a Sonoran pronghorn will cease if a Sonoran pronghorn is seen within 1 mile of the project site or any access road to the site. For vehicle operations, this entails stopping the vehicle until the animal moves away on its own volition. Vehicles may then continue on at no more than 15 mph. Maintenance crews and personnel in vehicles will wait up to 3 hours from the initial sighting for the animal to move beyond 1 mile. If the animal has not moved the required distance, all personnel will retreat back away from the animal. Ensure all maintenance-related personnel are trained to identify Sonoran pronghorn.

The CBP Sonoran pronghorn monitor will have the full authority to delay or stop activities at TCA-AJO-0553 if a pronghorn is observed within 2 miles during construction or within 1 mile during maintenance.

Detections (i.e., detected construction or maintenance personnel) of Sonoran pronghorn will be reported via electronic mail to USFWS-AESO and the corresponding DOI land manager within 48 hours of the detection. The electronic mail will include the following details: a) if known, the coordinates and a description of the location of the where the Sonoran pronghorn was detected, b) the date and time of the detection, c) the method used to make the detection, and d) as available, other pertinent details, such as the behavior of the Sonoran pronghorn (i.e., whether it was standing, foraging, running).

Agaves and columnar cacti will be avoided to the extent practicable to minimize impacts on the lesser long-nosed bat. Those plants that cannot be avoided will be transplanted. Agaves and columnar cacti less than 3 feet that cannot be avoided during construction will be relocated outside the project corridor, and columnar cacti over 3 feet will be replaced at a 3:1 ratio.

Mexican Spotted Owl

In Mexican spotted owl habitat, the removal of trees would be limited to only those that could pose a danger to the traveling public or that preclude passage of construction equipment and materials. Habitat disturbance will be minimized by restricting vegetation removal to the footprint of the activity. To allow for natural regeneration of native plants, all native plants will be removed by cutting the vegetation with hand tools, mowing, trimming or using other removal methods that allow root systems to remain intact.

Flat-Tailed Horned Lizard

CBP will complete coordination with Reclamation and BLM to ensure compliance with the Flat-tailed Horned Lizard Rangeland Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003).

5.5 CULTURAL RESOURCES

CBP will comply with Arizona SHPO's requests to protect cultural resources sites during construction activities. Adverse effects on these sites will be avoided by either flagging the boundary of the site, selecting alternative construction alignments or monitoring the site during construction. If avoidance measures are not feasible, further consultation with Arizona SHPO would be required.

If previously unidentified cultural resources are encountered during tower construction and related activities, all ground-disturbing actions in the vicinity of the discovery will cease until an archaeologist is notified and the nature and significance of the discovery is evaluated.

If unmarked human burials are discovered during construction, work will stop in the immediate vicinity, the remains will be protected, and the local law enforcement will be notified. The local cultural resources representative and the state SHPO will be notified. The location of the unmarked human burial will be documented and the provisions of Native American Graves Protection and Repatriation Act will be implemented, including consultation with Native American tribes.

5.6 AIR QUALITY

BMPs will include suitable fencing to restrict traffic within the project area in order to reduce soil disturbance. Soil watering will be utilized to minimize airborne particulate matter created during construction activities. Bare ground will be covered with hay or straw to lessen wind erosion between facility construction and landscaping. All construction equipment and vehicles will be kept in good operating condition to minimize exhaust emissions.

5.7 WATER RESOURCES

Standard construction procedures will be implemented to minimize the potential for erosion and sedimentation during construction. All work will cease during heavy rains and will not resume until conditions are suitable for the movement of equipment and material. Because the impact area is greater than 1 acre, as part of the NPDES permit process, a SWPPP and NOI will be submitted to the EPA, ADEQ and California Environmental Protection Agency prior to the start

of construction. Sedimentation and pollution of surface waters by fuels, oils and lubricants will be minimized through the implementation of the SWPPP. Construction activities will avoid transmitting disease vectors, introducing invasive non-native species, and depleting natural aquatic systems by using wells, irrigation water sources or treated municipal sources for construction or irrigation purposes instead of natural sources.

5.8 NOISE

During the construction phase, short-term noise impacts are anticipated. All OSHA requirements will be followed. The level of construction and maintenance noise of tower projects (from construction, maintenance and operations) will be significantly minimized within Sonoran pronghorn and lesser long-nosed bat habitat. To lessen noise impacts on the local wildlife communities, construction will only occur only during daylight hours.

Temporary sound barriers such as earthen berms, sound curtains, aqueous foam and blasting mats will be deployed during blasting activities to reduce noise levels. All motor vehicles will be maintained to reduce the potential for vehicle-related noise. All generators will have an attached muffler, or use other noise-abatement methods in accordance with industry standards.

5.9 SOLID AND HAZARDOUS WASTES

A SWPPP will be prepared prior to construction activities, and BMPs described in the SWPPP shall be implemented to reduce erosion and any subsequent sedimentation and pollution of surface waters by fuels, oils and lubricants will be minimized through the implementation of the SWPPP.

Care will be taken to avoid impacting the project area with any hazardous substances (e.g., anti-freeze, fuels, oils, lubricants) used during construction. Procedures will be utilized during refueling (such as the use of catch pans). Although accidental spills could occur as a result of maintenance procedures to construction equipment, the amount of fuel, lubricants and oil will be limited, and the equipment necessary to quickly contain any spills will be present during refueling. An SPCCP will be in place prior to the start of construction and all personnel will be briefed on the implementation of this plan.

5.10 ROADWAYS AND TRAFFIC

Construction vehicles will travel and equipment will be transported on appropriate roads with proper flagging and safety precautions.

Construction vehicles and equipment will avoid travel on Highway 85 during high usage times such as weekends, holidays and during spring break.

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 6.0

REFERENCES



6.0 REFERENCES

- Arizona Department of Commerce (AZDC). 2002. Profile of Yuma County, Arizona. Internet URL: www.azcommerce.com.
- AZDC. 2003. Profile of Santa Cruz County, Arizona. Internet URL: <http://www.co.santa-cruz.az.us/mjhmp/2006Report/Appendix%20B/Santa%20Cruz%20County.pdf>.
- AZDC. 2008. Profile of Pima County. Internet URL: <http://www.azcommerce.com/doclib/COMMUNE/Pima%20County.pdf>.
- Arizona Department of Environmental Quality (ADEQ). 2012. Waste Programs Division: Compliance. Internet URL: <http://www.azdeq.gov/enviro/waste/compliance/index.html>. Last Accessed: March 29, 2012.
- ADEQ. 2011. 2010 Status of Water Quality. Arizona's Integrated 305(b) Assessment and 303(d) Listing Report.
- Arizona Department of Transportation (ADOT). 2009. Arizona State Highway Log (2007 to 2009 Annual ADTs). Internet URL: <http://www.azdot.gov/mpd/data/Reports/PDF/CurrentAADT.pdf>.
- Arizona Department of Water Resources (ADWR). 2006. *Arizona Water Atlas*. Volume 1 Introduction. Draft June, 2006.
- ADWR. 2009. *Arizona Water Atlas*. Volume 3 Southeastern Arizona Planning Area. Final June, 2009.
- Arizona Game and Fish Department (AGFD). 2011a. "Game and Fish confirms report of jaguar in southern Arizona." Internet URL: <http://azgfd.net/artman/publish/NewsMedia/Game-and-Fish-confirms-report-of-jaguar-in-southern-Arizona.shtml>. Last accessed January 11, 2012.
- AGFD. 2011b. Arizona State Listed Species compiled and edited by the Heritage Data Management System (HDMS), Arizona Game and Fish Department, Phoenix, AZ. 4 pp. Internet URL: http://www.azgfd.gov/w_c/edits/documents/allspecies_bycounty_001.pdf.
- AGFD. 2004. *Leopardis pardalis*. Unpublished abstract compiled and edited by the Heritage Data Management System, AGFD, Phoenix, AZ. 5pp.
- AGFD. 2003. Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuenae*) Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 8pp.

- AGFD. 2001. Desert Tortoise (*Gopherus agassizii*) Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 11 pp.
- Arizona Public Service Company (APS). 2011. APS 2011 Service Area Map. Internet URL: http://www.aps.com/images/pdf/AZ_Map.pdf.
- Arizona's Touchstone Energy Cooperatives. 2011. Arizona's Touchstone Energy Cooperatives 2011 Service Map. Internet URL: <http://www.aztouchstoneenergy.coop/metadot/index.pl>.
- Averill-Murray, R.C., and C.M. Klug. 2000. Monitoring and Ecology of Sonoran Desert Tortoises in Arizona. *Nongame and Endangered Wildlife Program Technical Report* 161. Arizona Game and Fish Department, Phoenix, Arizona. 115 pp.
- Avila-Jiménez, D.Z. 2005. Changes in the Pinacate Reserve Ecosystems: Invasion of Non-Native Plants. USDA Forest Service Proceedings RMRS-P-36. 99 295-297.
- Beason, Robert. 1999. The Bird Brain: Magnetic Cues, Visual Cues, and Radio Frequency (RF) effects. Robert C. Beason, Ph.D., Biology Department, State University of New York, Geneseo, NY 14454. Ph. 716/ 245-5310. Internet URL: <http://www.fws.gov/migratorybirds/issues/towers/beason.html>.
- Biggs, T.H, Leighty, R.S., Skotnicki, S.J., and P. A. Pearthree. 1999. Geology and Geomorphology of San Bernardino Valley, Southeastern Arizona. *Arizona Geological Survey Open-File Report* 99-19. October 1999.
- Brennan, T. C., and A. Holycross. 2006. *A Field Guide to Amphibians and Reptiles in Arizona*. Arizona Game and Fish Department. May 2009.
- Brown, D.E. and C.A. Lopez Gonzalez. 2001. *Borderland Jaguars*. University of Utah Press, Salt Lake City, UT.
- Brown, D.E. and C.H. Lowe. 1994. *Biotic communities of the southwestern United States and northwestern Mexico*. University of Utah Press, Salt Lake City, UT.
- Bureau of Land Management (BLM). 2009. U.S. Department of the Interior—BLM Manual H-8410-1-Visual Resources Inventory. Internet URL: <http://www.blm.gov/nstc/VRM/8410.html>.
- Burt, W. H., and R. P. Grossenheider. 1976. *A Field Guide to the Mammals*. Third edition. Houghton Mifflin Co., Boston. 289 pp.
- California Air Resources Board (CARB) 2012. Area Designations Maps/State and National. Date last accessed: 2/10/12. <http://www.arb.ca.gov/desig/adm/adm.htm>

- California Department of Fish and Game (CDFG). 2012. Biogeographic Data Branch. California Natural Diversity Database of state-listed endangered, threatened, and rare plants. Internet URL: <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEPlants.pdf>.
- CDFG. 2011. Biogeographic Data Branch. California Natural Diversity Database of state-listed endangered and threatened animals. Internet URL: <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEAnimals.pdf>.
- California Department of Transportation (Caltrans). 2010. California Interstate and State Highway Log Annual ADTs. Internet URL: <http://trafficcounts.dot.ca.gov/2009all/2009TrafficVolumes.htm>.
- Caltrans. 1998. Technical Noise Supplement by the California Department of Transportation Environmental Program Environmental Engineering-Noise, Air Quality, and Hazardous Waste Management Office. October 1998 Page 24-28.
- California Department of Water Resources (CDWR). 2009. California Water Plan 2009 Update: Colorado River Integrate Water Management. Bulletin 160-09. Regional Reports Volume 3.
- California Water Resources Control Board (CWRCB). 2004. Hydrologic Region Colorado River Imperial Valley Groundwater Basin. *California's Groundwater Bulletin* 118.
- CalEnergy. 2012. Utility Service Providers by Jurisdiction. Internet URL: http://regarchive.sdge.com/sunrisepowerlink/info/PEA/Chapter_4/Table_4_12_1.pdf.
- California Energy Commission 2007. 2007 Integrated Energy Policy Report, CEC-100-2007-008-CMF.
- Cochise County 2011. Letter from Cochise County, County Administrator, Mr. Michael J. Ortega, P.E. to U.S. CBP, Environmental Protection Specialist, Mr. Joseph Zidron concerning Cochise County comments on the EA for the construction and operation of the proposed new FOB in USBP Douglas Station's AOR, Tucson Sector. September 13, 2011.
- Cochise County. 2002. Cochise County Comprehensive Plan. Amended and adopted by the Cochise County Board of Supervisors September 9, 2003. Resolution number 02-79.
- Cochise County. 2003. Cochise County Planning and Zoning. Zoning Base Maps and Summary of Zoning Districts. Internet URL: http://cochise.az.gov/cochise_planning_zoning.aspx?id=340&ekmense=c580fa7b_182_358_340.
- Cockrum, E.L., and Y. Petryszyn. 1991. The Long-Nosed Bat, *Leptonycteris*: An Endangered Species in the Southwest? *Occ. Papers Museum Texas Tech University*. No. 142, 32 pp.

- Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects: Under the National Environmental Policy Act*. January 1997. Internet URL: <http://ceq.hss.doe.gov/nepa/ccenepa/exec.pdf>.
- CEQ. 2010. Memorandum for Heads of Federal Departments and Agencies. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. Nancy H. Sutley., February 18, 2010.
- Cummins 2010. Low-emissions technologies. Manufactures data, Cummins Power Generation.
- DeNayer, Larry. 2011. Memorandum for Record: Minimum Physical Security Requirements for CBP/OTIA Fixed Tower Sites. Dated December 8, 2011.
- Esparza, Adrian X. and John I. Carruthers. 2000. "Land Use Planning and Exurbanization in the Rural Mountain West." *Journal of Planning Education and Research* 20:23-36. September 2000.
- Evans, W. R., and A. M. Manville, II (eds.). 2000. Avian mortality at communication towers. Transcripts of Proceedings of the Workshop on Avian Mortality at Communication Towers, August 11, 1999, Cornell University, Ithaca, NY. Internet URL: <http://migratorybirds.fws.gov/issues/towers/agenda.html>.
- Federal Emergency Management Agency (FEMA). 2008. Internet URL: <http://msc.fema.gov/webapp/wcs>. Last Accessed 23, 2008.
- Federal Highway Administration (FHWA) 2007. Special Report: Highway construction Noise: Measurement, Prediction, and Mitigation, Appendix A Construction Equipment Noise Levels and Ranges. www.fhwa.dot.gov/environment/noise/highway/hcn06.htm.
- Findley, J.S., A.H. Harris, D.E. Wilson, and C. Jones. 1975. *Mammals of Arizona*. University of Arizona Press, Albuquerque, Arizona. xxii + 360 pp.
- Flat-tailed Horned Lizard Interagency Coordinating Committee. 2003. Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 revision. 78 pp.
- Ganey, J.L., G.C. White, A.B. Franklin, J.P. Ward, Jr., and D.C. Bowden. 2000. *A Pilot Study on Monitoring Populations of Mexican Spotted Owls in Arizona and New Mexico: Second Interim Report*. 41 pp.
- Girmendonk, A.L. 1994. Ocelot, jaguar, and jaguar sighting reports: Arizona and Sonora, Mexico. *Nongame and Endangered Wildlife Program Technical Report 35*. Arizona Game and Fish Department, Phoenix, Arizona.
- Gulf South Research Corporation (GSRC). 2012. Final Annual Bat Carcass Survey Report (2010) for the SBInet Ajo-1 Tower Project.

- GSRC. 2011. Final Annual Bat Carcass Survey Report (2011) for the SBInet Ajo-1 Tower Project.
- Hart, David R. 2012. Draft Cultural Resources Surveys In Support of Proposed Remote Video Surveillance Systems for U.S. Customs and Border Protection, Office of Technology Innovation and Acquisition, U.S. Border Patrol, Tucson And Yuma Sectors, Arizona and California. U.S. Customs and Border Protection, U.S. Border Patrol, Tucson and Yuma Sectors, Arizona. Gulf South Research Corporation, Baton Rouge, Louisiana.
- Hatten, J.R., A. Averill-Murray, and W.E. Van Pelt. 2002. Characterizing and mapping potential jaguar habitat in Arizona. *Nongame and Endangered Wildlife Program Technical Report 203*. Arizona Game and Fish Department, Phoenix, Arizona.
- Hummingbird Monitoring Network (HMN). 2008. Habitat requirements for successful nesting of hummingbird species in the Madrean Pine-Oak Woodlands of southeastern Arizona. URL: http://www.hummonnet.org/research/Nesting_habitat_study.pdf.
- Kelly, C. 2007. Health Physics Society, Radiofrequency (RF) Radiation. Internet URL: <http://hps.org/hpspublications/articles/rfradiation.html>.
- McCain, E.B. and J.L. Childs. 2008. Evidence of Resident Jaguars (*Panthera onca*) in the Southwestern United States and the Implications for Conservation. *Journal of Mammalogy*. 89(1):1-10.
- Midwest Research Institute, (MRI). 1996. Improvement of Specific Emission Factors (BACM Project No. 1) Prepared for South Coast Air Quality Management District. SCAQMD Contract 95040, Diamond Bar, CA. March 1996.
- Miranda, Chris. 2006. Personal communication from Chris Miranda regarding water use associated with new and improved roads.
- National Park Service. NPS. 2009. Noise Roughness Calculations Distribution Model. Personal email from Randy Stanley, Acoustics Specialist, NPS Natural Sounds Program.
- National Park Service (NPS). 2003. Environmental Assessment for Vehicle Barriers on the Organ Pipe Cactus National Monument and Coronado National Memorial. U.S. Department of Interior, National Park Service. April 2003.
- National Resources Conservation Service (NRCS). 1972. *Soil Survey for Organ Pipe Cactus National Monument Pima County, Arizona, a special report*. USDA Soil Conservation Service, Phoenix, Arizona in cooperation with U.S. Department of the Interior NPS and the Arizona Agricultural Experiment Station.
- NRCS. 1979. *Soil Survey for Santa Cruz and Parts of Cochise and Pima Counties, Arizona*. USDA Soil Conservation Service and Forest Service in cooperation with the Arizona Agricultural Experiment Station.

- NRCS. 1980. *Soil Survey of Yuma-Wellton Area, Parts of Yuma County, Arizona and Imperial County, California*. USDA Soil Conservation Service in cooperation with the Arizona Agricultural Experiment Station and the California Agricultural Experiment Station.
- NRCS. 2003a. *Soil Survey of Pima County, Arizona, Eastern Part*. USDA NRCS in cooperation with U.S. Department of the Interior, Bureau of Indian Affairs and BLM, NPS, and the Arizona Agricultural Experiment Station.
- NRCS. 2003b. *Soil Survey for Cochise County Arizona, Douglas-Tombstone Part*. USDA and NRCS in cooperation with the Hereford, San Pedro, Willcox-San Simon, and Whitewater Draw Natural Resource Conservation Districts and the Arizona Agricultural Experiment Station.
- NRCS. 2010. California Department of Conservation Farmland Mapping and Monitoring Program. Soil Candidate Listing for Prime Farmlands and Farmland of Statewide Importance, Imperial County. USDA NRCS Davis, California.
- NRCS. 2012. Web Soil Survey. Custom Soil Resource Reports for Preferred and Alternative OTIA RVSS Tower Sites in Yuma, Pima, Santa Cruz, and Cochise County, Arizona. Internet URL: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx> .
- Nicholls, Barry and PA Racey. 2007. Bats avoid radar installations: could electromagnetic fields deter bats from colliding with wind turbines? *PLoS ONE* 2(3): e297. doi:10.1371/journal.pone.0000297.
- Office of Engineering and Technology (OET). 1999. Questions and Answers about Biological Effects Potential Hazards of Radiofrequency Electromagnetic Fields. *OET, Federal Communications Commission Bulletin* Number 56, Fourth Edition, August 1999. Internet URL: http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf.
- Peterson, J and Zimmer, B.R. 1998. *Birds of the Trans Pecos*. University of Texas Press: Austin. 216 pp.
- Pima County Department of Transportation. 2006. Arizona Natural Vegetation. Pima County Department of Transportation Geographic Information Services Division. <Http://gis.pima.gov/data/contents/keyword.cfm?keyword=Vegetation>. Last updated 8 May 2006
- Santa Cruz County. 2004. Santa Cruz County Comprehensive Plan. Adopted by the Board of Supervisors by Resolution Number 2004-11 on June 29, 2004. Internet URL: http://www.co.santa-cruz.az.us/com_development/pdf/complete-plan-2005.pdf.
- Stebbins, R. C. 2003. *Petersons Field Guides, Western Reptiles and Amphibians*. Houghton Mifflin, Boston pp 533.

- Stitt, E.W., Mau-Crimmins, T., and Swann, D.E. 2005. Biogeography of Amphibians and Reptiles in Arizona. *USDA Forest Service Proceedings* RMRS-P-36. pp. 140-144.
- Thalheimer, E. 2000. Construction Noise Control Program and Mitigation Strategy at the Central Artery/Tunnel Project. *Noise Control Engineering Journal* 48(5):157–165.
- Tuegel, Marty. 2007. Observations from a long-term study of the desert box turtle in Arizona. Full Abstract Third Box Turtle Conservation Workshop. Arizona Ecological Services Office, USFWS, Tucson, Arizona. URL: www.boxturtlesintrouble.org/index.html.
- U.S. Bureau of Economic Analysis. 2010. Data. Internet URL: <http://www.bea.gov/iTable/iTable.cfm?ReqID=70&step=1&isuri=1&acrdn=5>.
- U.S. Census Bureau. 2010a. 2010 U.S. Census data. Internet URL: <http://factfinder2.census.gov/>.
- U.S. Census Bureau. 2010b. American Community Survey, 5-Year Estimates, 2006-2010. Internet URL: <http://factfinder2.census.gov/>.
- U.S. Census Bureau. 2009. 2009 County Business Patterns data. Internet URL: <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl>.
- U.S. Census Bureau. 2000. 2000 U.S. Census data. Internet URL: <http://factfinder2.census.gov/>.
- U.S. Customs and Border Protection (CBP). 2008. Environmental Assessment for the Proposed SBInet Tucson West Project Ajo, Tucson, Casa Grande, Nogales, and Sonoita Stations Areas of Operation, U.S. Border Patrol, Tucson Sector, Arizona. September 2008.
- CBP. 2009a. Secure Borders, Safe Travel, Legal Trade, U.S. Customs and Border Protection Fiscal Year 2009-2014 Strategic Plan. CBP Publication Number 0401-0809. Prepared by Office of Policy and Planning. Washington, D.C. 20229.
- CBP. 2009b. Final Environmental Assessment for the Proposed SBInet Ajo-1 Tower Project, Ajo Station's Area of Responsibility, U.S. Border Patrol Tucson Sector. December 2009.
- CBP. 2010. Final Supplemental Environmental Assessment for the SBInet Tucson West Tower Project Nogales and Sonoita Stations' Areas of Operation, U.S. Border Patrol, Tucson Sector, Arizona. June 2010.
- CBP. 2011. Final Environmental Assessment for the Proposed Ajo Forward Operating Base, Ajo Station Area of Responsibility, U.S. Border Patrol Tucson Sector. September 2011.

- U.S. Customs and Border Protection (CBP). 2012a. 2012-2016 Border patrol Strategic Plan. CBP Office of Border Patrol. Washington, DC 20229. Internet URL: http://www.cbp.gov/linkhandler/cgov/border_security/border_patrol/bp_strat_plan/bp_strat_plan.ctt/bp_strat_plan.pdf.
- CBP. 2012b. Office of Technology Innovation and Acquisition (OTIA) Responsibilities (Acquisition Policy, Process and Documentation). Internet URL: http://www.cbp.gov/xp/cgov/border_security/otia/otia_resp.xml. Last accessed 2 July 2012.
- CBP. 2012c. Notional RVSS site drawings. Office of Technology Innovation and Acquisition.
- CBP. 2012d. Final Biological Field Survey Report for the Proposed Remote Video Surveillance System Upgrade Program (New Towers), Tucson and Yuma Sectors, Arizona and California, U.S. Customs and Border Protection, Department of Homeland Security, Washington, D.C. May 2012.
- CBP. 2012e. Final Environmental Stewardship Plan for Construction, Operation and Maintenance of Tactical Infrastructure, Zone 20, Nogales Station, U.S. Border Patrol Tucson Sector, Arizona. February 2012.
- CBP. 2012f. Draft Environmental Assessment for Integrated Fixed Towers in the U.S. Border Patrol's Douglas Station Area of Responsibility, Tucson Sector, Arizona, U.S. Customs and Border Protection, Department of Homeland Security, Washington, D.C.
- CBP. 2012g. Final Supplemental Environmental Assessment for the Proposed Forward Operating Base at the Floyd Pocket Project Area, Douglas Station's Area of Responsibility, U.S. Border Patrol, Tucson Sector. March 2012.
- CBP. 2012. Biological Assessment Addressing Proposed Tactical Infrastructure Maintenance and Repair Along the U.S./Mexico International Border in Arizona. April 2012.
- U.S. Departments of Air Force, Navy, and Interior. 2003. Environmental Impact Statement for the Barry M Goldwater Range, Integrated Natural Resources Management Plan.
- U.S. Department of Homeland Security (DHS). 2011. Report on the Assessment of the Secure Border Initiative-Network (SBInet) Program.
- U.S. Environmental Protection Agency (EPA). 2001. Procedures Document for National Emission Inventory, Criteria Air Pollutants 1985-1999. EPA-454/R-01-006. Office of Air Quality Planning and Standards Research Triangle Park NC 27711.
- EPA. 2005a. User's Guide for the Final NONROAD2005 Model. EPA420-R-05-013 December 2005.
- EPA. 2005b. Emission Facts: Average In-Use Emissions from Heavy Duty Trucks. EPA 420-F-05-0yy, May 2005.

- EPA. 2005c. Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks. EPA 420-F-05-022.
- EPA. 2005d. EPA Emission Facts: Average In-Use Emission Factors for Urban Buses and School Buses. Office of Transportation and Air Quality EPA420-F-05-024 August 2005.
- EPA. 2010a. National Ambient Air Quality Standards (NAAQS). Available online: <http://www.epa.gov/air/criteria.html>. Last Accessed. 4/11/2010.
- EPA. 2010b. Welcome to the Green Book Nonattainment Areas for Criteria Pollutants www.epa.gov/oar/oaqps/greenbk.
- EPA. 2012a. Pacific Southwest, Region 9 Sole Source Aquifers. Upper Santa Cruz and Avra Basin Soul Source Aquifer Designated Area. Internet URL: <http://www.epa.gov/region9/water/groundwater/ssa-pdfs/Upper-Santa-Cruz-Avra-Basin-SSA-map.pdf>.
- EPA. 2012b. Pacific Southwest, Region 9 Sole Source Aquifers. Naco-Bisbee Soul Source Aquifer Designated Area. Internet URL: <http://www.epa.gov/region9/water/groundwater/ssa-pdfs/Naco-Bisbee-SSA-map.pdf>.
- U.S. Fish and Wildlife Service (USFWS). 2012a. Species by County Report, Pima County, Arizona. Internet URL: http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=04023
- USFWS. 2012b. Species by County Report, Santa Cruz County, Arizona. Internet URL: http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=04023
- USFWS. 2012c. Species by County Report, Cochise County, Arizona. Internet URL: http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=04023
- USFWS. 2012d. Official Species List for Imperial County, California: OTIA RVSS Arizona Towers. Carlsbad Fish and Wildlife Office. List generated by USFWS Information, Planning, and Consultation (IPaC) System. Internet URL: <https://ecos.fws.gov/ipac/>.
- USFWS. 2012e. Endangered and Threatened Wildlife and Plants; Endangered Status and Designations of Critical Habitat for Spikedace and Loach Minnow. Federal Register 77(36): 10810.
- USFWS. 2011a. Species by County Report, Yuma County, Arizona. Internet URL: http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=04023.

- USFWS. 2011b. Reinitiation of Formal Consultation on the SBInet Ajo-1 Tower Project, Ajo Area of Responsibility, United States Border Patrol, Tucson Sector, Arizona; Proposed Construction, Operation, and Maintenance of a Forward Operating Base, Organ Pipe Cactus National Monument, Pima County, Arizona. Consultation numbers 22410-2009-F-0089-R3 and 224101989-F-0078-R7. Arizona Ecological Services Office, Phoenix. September 2011.
- USFWS. 2011c. Draft Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*), First Revision. U.S. Fish and Wildlife Service. Albuquerque, New Mexico, USA. Xpp.
- USFWS 2011d. Arizona Ocelot. Available online: <http://www.fws.gov/endangered/about/vp-54-2011.html>. Last updated October 20, 2011.
- USFWS. 2010. The Ocelot (*Leopardus pardalis*). Available online: <http://www.fws.gov/endangered/esa-library/pdf/ocelot.pdf> Last accessed: February 8, 2012.
- USFWS. 2008. General Species Information: Mexican Spotted Owl. Arizona Ecological Services Field Office. May 2008.
- USFWS. 2005. Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of Northern Aplomado Falcons in New Mexico and Arizona and Availability of Draft Environmental Assessment. Federal Register 70(26): 6819.
- USFWS. 2004. Department of the Interior Fish and Wildlife Services. 50 C.F.R. Part 17. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl. Final Rule. Published March 31, 2004. 50 pp.
- USFWS. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. 210 pp.
- USFWS. 2000. Service Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning. Memorandum to Regional Directors from Director Jamie Rappaport Clark. September 14, 2000.
- USFWS. 1997. Lesser Long-Nosed Bat Recovery Plan. Albuquerque, New Mexico. 49pp.
- USFWS. 1993. Department of the Interior Fish and Wildlife Services. 50 C.F.R. Part 17. Endangered and Threatened Wildlife and Plants; Final Rule to List the Mexican Spotted Owl as a Threatened Species. Final Rule. Published March 16, 1993. 24 pp.
- USFWS. 1990. Listed Cats of Texas and Arizona Recovery Plan (With Emphasis on the Ocelot). USFWS, Albuquerque, New Mexico. 131pp.

U.S. Housing and Urban Development . 1984. 24 C.F.R. Part 51 - Environmental Criteria and Standards Sec. 51.103 Criteria and standards 44 FR 40861, July 12, 1979, as amended at 49 FR 12214, Mar. 29, 1984.

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 7.0
ACRONYMS/ABBREVIATIONS



7.0 ACRONYMS/ABBREVIATIONS

Analysis of Alternatives	AoA
Advisory Council on Historic Preservation	ACHP
annual average daily traffic count	AADT
above mean sea level	amsl
area of responsibility	AOR
Arizona Department of Environmental Quality	ADEQ
Arizona Department of Water Resources	ADWR
Arizona Ecological Service Office	AESO
Arizona Game and Fish Department	AGFD
Arizona Natural Heritage Program	ANHP
American National Standards Institute	ANSI
Arizona Public Service	APS
Arizona State Museum	ASM
Arizona State Trust Lands	ASTL
Arizona Technology Plan	ATP
Arizona Department of Commerce	AZDC
Bureau of Land Management	BLM
Barry M. Goldwater Range	BMGR
best management practice	BMP
candidate	C
command and control center	C2
California Ambient Air Quality Standards	CAAQS
California Department of Transportation	Caltrans
California Air Quality Board	CARB
U.S. Customs and Border Protection	CBP
cross-border violator	CBV
California Department of Fish and Game	CDFG
Council on Environmental Quality	CEQ
Chlorofluorocarbons	CFC
Code of Federal Regulations	C.F.R.
methane	CH ₄
Coronado National Forest	CNF
carbon monoxide	CO
carbon dioxide	CO ₂
Cabeza Prieta National Wildlife Refuge	CPNWR
Clean Water Act	CWA
decibel	dB
A-weighted decibel	dBA
U.S. Department of Interior	DOI
Department of Homeland Security	DHS

THIS PAGE LEFT INTENTIONALLY BLANK

Environmental Assessment	EA
Electromagnetic	EM
Executive Order	EO
U.S. Environmental Protection Agency	EPA
Endangered Species Act	ESA
Federal Aviation Administration	FAA
Federal Communications Commission	FCC
Food and Drug Administration	FDA
Federal Emergency Management Agency	FEMA
Federal Highway Administration	FHWA
forward operating base	FOB
Finding of No Significant Impact	FONSI
Farmland Protection Policy Act of 1980 and 1995	FPPA
Federal Register	FR
greenhouse gas	GHG
Gulf South Research Corporation	GSRC
Hydrochlorofluorocarbons	HFC
U.S. Department of Housing and Urban Development	HUD
Institute of Electrical and Electronics Engineers	IEEE
integrated fixed tower	IFT
isolated occurrence	IO
laser illuminator	LI
micrograms per cubic meter	µg/m ³
milligrams per cubic meter	mg/m ³
maximum permissible exposure	MPE
miles per hour	mph
National Ambient Air Quality Standards	NAAQS
National Environmental Policy Act of 1969	NEPA
National Historic Preservation Act	NHPA
nitrogen dioxide	NO ₂
nitrous oxide	N ₂ O
Notice of Availability	NOA
Notice of Intent	NOI
nitrogen oxides	NO _x
National Pollutant Discharge Elimination System	NPDES
National Park Service	NPS
Natural Resources Conservation Service	NRCS
National Register of Historic Places	NRHP

THIS PAGE LEFT INTENTIONALLY BLANK

National Telecommunications and Information Administration	NTIA
Nationwide Permit	NWP
Ozone	O ₃
Office of Engineering and Technology	OET
Organ Pipe Cactus National Monument	OPCNM
Occupational Safety and Health Administration	OSHA
Office of Technology Innovation and Acquisition	OTIA
lead	Pb
primary constituent element	PCE
Public Law	P.L.
particulate matter< 2.5 micrometers	PM-2.5
particulate matter <10 micrometers	PM-10
port of entry	POE
parts per million	ppm
Bureau of Reclamation	Reclamation
radio frequency	RF
region of influence	ROI
Remote Video Surveillance System	RVSS
Secure Border Initiative-network	SBI <i>net</i>
State Historic Preservation Officer	SHPO
Sulfur dioxide	SO ₂
Spill Prevention, Control and Countermeasures Plan	SPCCP
Stormwater Pollution Prevention Plan	SWPPP
U.S. Army Corps of Engineers	USACE
U.S. Border Patrol	USBP
U.S. Code	U.S.C.
U.S. Census Bureau	USCB
U.S. Department of Agriculture	USDA
U.S. Forest Service	USFS
U.S. Fish and Wildlife Service	USFWS
Volatile organic compounds	VOC

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 8.0
LIST OF PREPARERS



8.0 LIST OF PREPARERS

The following people were primarily responsible for preparing this EA.

Name	Agency/Organization	Discipline/Expertise	Experience	Role in Preparing EA
Mary Hassell	CBP, OTIA	Forestry/Wildlife/ Environmental Biology	27 years of NEPA, environmental science studies and natural and cultural resources management	EA review
Paula Miller	CBP, OTIA	NEPA/Legal	30 years of environmental compliance law and NEPA compliance	EA review
Howard Nass	GSRC	Forestry/Wildlife	20 years of natural resources studies and NEPA	Project Manager (EA preparation and review)
Chris Ingram	GSRC	Biology/Ecology	33 years of EA/EIS studies	EA review
Josh McEnany	GSRC	Forest Management	11 years of NEPA compliance	EA review
Annie Howard	GSRC	Ecology/Biology	3 years of natural resources studies	EA review
Carey L. Perry	GSRC	Ecology/Wetlands	4 years of natural resources studies	EA preparation (Land Use, Geology and Soils, Water Resources, Vegetative Habitat, Wildlife Resources, Protected Species and Critical Habitats, Utilities and Infrastructure, Radio Frequency Environment, Roadways and Traffic, Aesthetics and Visual Resources)
Steve Kolian	GSRC	Environmental Science	12 years of natural resources studies	EA preparation (Air, Noise and Water Resources)
Maria Bernard Reid	GSRC	Environmental Studies	12 years of NEPA and natural resources studies	EA preparation (Cumulative Impacts)
John Ginter	GSRC	Wildlife	10 years of natural resources studies	Biological resources surveys

Name	Agency/Organization	Discipline/Expertise	Experience	Role in Preparing EA
Dave Hart	GSRC	Archaeology	17 years of professional archaeology/cultural resources studies	Cultural resources surveys
Kreg Ellzey	GSRC	Archaeology	5 years of cultural resources studies	EA preparation (Cultural Resources)
Ann Guissinger	GSRC	Economics	30 years economic analysis	EA preparation (Socioeconomics and Environmental Justice and Protection of Children)
Steve Oivanki	GSRC	Geology/NEPA	20 years of natural resources and NEPA experience	EA preparation (Hazardous Materials)
Sharon Newman	GSRC	GIS/Graphics	17 years GIS/graphics experience	GIS/Graphics